

Machine and Tool **BLUE BOOK**

SERVING THE METAL WORKING INDUSTRY SINCE 1906

SEPTEMBER, 1949

THIS MONTH

How Much Does it Cost to Use Radio
Frequency Heating?

Cam-Operated, Double-Action Press
Increases Production, Lowers Maintenance

Die Innovations For Better Production

NMTBA Sales Refresher Course

Letter From London

What's New In Metalworking

Shop Hints

Advertisers' Products Index

Index to Advertisers

COMPLETE INDEX ON PAGE 5

A HITCHCOCK PUBLICATION



This is another of the
"HUNDREDS OF JOBS"
which can be done on a
MARVEL Band Saw!

MARVEL BAND SAW saved these
two 4400 lb. castings

Two sand cores washed out when these giant 4400 pound steel connecting rods were cast, resulting in solid eye ends without gaps. Then came the \$64 question—how to machine out the $1\frac{1}{2}$ " slots in the longitudinal center of the eyes which were 22" high and had a wall thickness of $6\frac{1}{2}$ ".

The Ernest J. Nelson Iron Works of San Francisco, did this "impossible" job easily, quickly and economically, without special tooling, on a standard Model No. 8M/2 MARVEL Band Saw. Two cuts were made in each rod in two hours per cut with tool cost of \$3.06 per rod. The tool was a MARVEL B9-10 Band Saw Blade.

Every tool room, machine shop and maintenance department needs a MARVEL Series 8 Universal Band Saw—not only for innumerable everyday jobs but for the occasional "trick" operations, where its utmost versatility will save many headaches and dollars.

WRITE FOR CATALOG

ARMSTRONG-BLUM MFG. CO.

5700 Bloomingdale Ave., Chicago 39, Illinois



- These exclusive MARVEL features made this job easy:*
1. Large, T-slotted work table.
 2. Blade feeds into work vertically; work always stationary.
 3. Power-pressure feed.
 4. Automatic blade tension.
 5. Built-in coolant system.
 6. Large capacity.

MARVEL *Metal Cutting*
SAWS
Better Machines—Better Blades

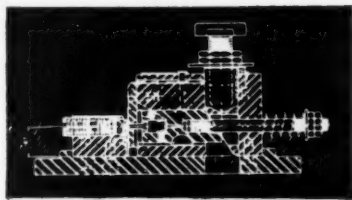
HOLES PIERCED AT 90° ANGLE...



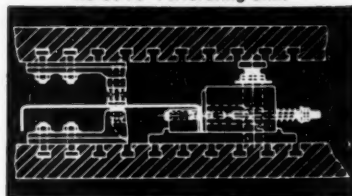
with **NEW WHISTLER UNIT**

PERFORATES HOLES UP TO $\frac{1}{2}$ " IN DIAMETER IN MATERIALS
TO $\frac{1}{16}$ " THICK MILD STEEL

Extruded shapes, ells, angles and other molded, shaped or fabricated pieces are easily pierced from the side at 90° with HU-50 Perforating Units. Quickly set up and adjustable, these units may be used separately or with standard perforating equipment. The advantages provided by other Whistler Adjustable Dies are retained. Absolute accuracy is assured. Quick change-over of hole arrangements can be made...in many cases, on the press. Production economies and speeded up operating schedules are effected. Continued re-use of units in different groupings spreads initial cost. It makes sense to look into the use of Whistler Adjustable Dies for all perforating, notching, slitting or rounding operations.



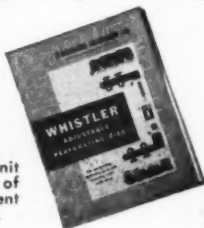
Detailed drawing showing operation of HU-50 90° Perforating Unit.



Typical set-up shows 90° perforating unit operated in conjunction with standard perforating equipment.

**DETAILS
EXPLAINED IN
CATALOG NO. 48**

Get the facts about this 90° perforating unit in a hurry. Your copy of this catalog will be sent at once upon request.

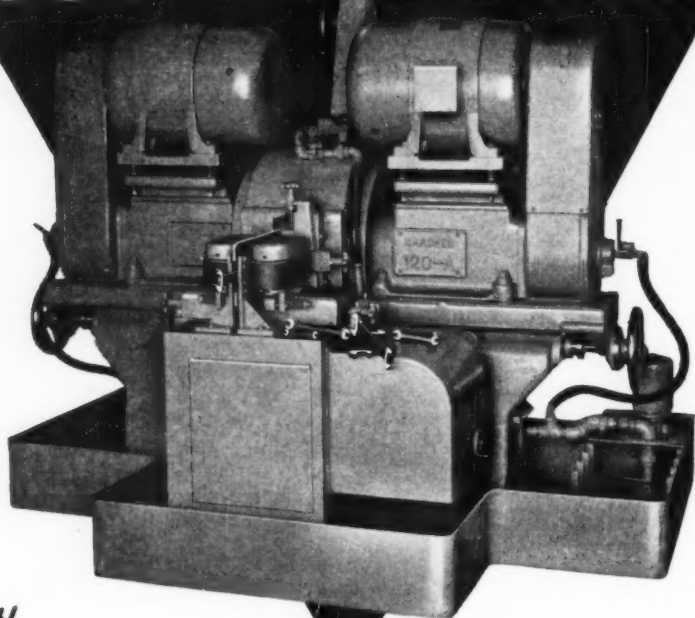


**S. B. WHISTLER
& SONS, Inc.**

760 Military Road • Buffalo 17, N. Y.

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

CUT your COSTS



with

GARDNER Double GRINDING

WHEN competition forces you to "sharpen your pencil", GARDNER Double GRINDING will help you cut parallel-surfacing costs to the bone — and without sacrificing quality.

By precision-grinding TWO sides with ONE pass, GARDNER Double GRINDERS reduce the time and labor required to parallel-surface many parts.

Typical, are these open-end wrenches fed into a No. 120A-23" GARDNER GRINDER in a continuous stream by a feed-thru fixture.

Let our engineers show you how GARDNER Double GRINDING will help you meet this buyers market, by cutting down your parallel-surfacing costs.

WORK DATA	
Part	Open End Wrenches
Material	5160 Forgings
Operation	Grind Two Sides of Both Ends
Tolerances	±.001 to .002 for Parallelism ±.001 for Straightness
Stock Removal	90% Maximum Overall
Production	2500 to 3000 Annually
Feed	Set on 6" size
Feed	Hand Feed to Feed Scales
Grinding Wheel	Grinding Wheel
Machine	No. 120A-23"
	Gardner Grinder

GARDNER - GRIND
YOUR Flat SURFACES

Write for GARDNER Double GRINDING Bulletin

GARDNER MACHINE COMPANY

436 East Gardner Street • • • • Beloit, Wisconsin, U.S.A.

THE "ABC'S" OF TURRET LATHE TOOLING



Bar Methods
Chuckling Methods
Combined Cuts
Multiple Cuts
Standard Tooling Setups
37 Tooling Diagrams
Production Planning

Detailed instructions on how to drill, bore, recess, ream, tap, turn, face, groove, form, and thread on a turret lathe.

64 Pages - 340 Illustrations

How to set up and produce practically all types of bar and chucking work on turret lathes is explained and illustrated clearly in this book, "How to Machine Parts on Turret Lathes." Any operator, young or old, will learn from this tooling guide and become more valuable to himself and his employer. It is sold far below actual cost to encourage operators to become better craftsmen. Send your order to The Warner & Swasey Co., Cleveland 3, Ohio.

**WARNER
&
SWASEY**
Machine Tools
Cleveland

SPECIAL PRICE 50c
SEND CASH, CHECK,
OR MONEY ORDER
Add any State
Sales Tax

Turret Lathes - Multiple and Single Spindle Automatics -
Precision Tapping and Threading Machines

Department 320
The Warner & Swasey Co., Cleveland 3, Ohio
Enclosed is Please send (.....) copies of
"How to Machine Parts on Turret Lathes" to:

Name

Address

City Zone State

17-9-48

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

ARMSTRONG



Quality
TOOLS



*Not a cost, but an investment
that pays year after year*

Buy **ARMSTRONG TOOL HOLDERS** and **TOOLS** for today's job and they will bring you added profits thru the years. With **ARMSTRONG TOOL HOLDERS** you will be permanently tooled up for whatever comes, for each is a multi-purpose tool that takes cutter-bits ground to many shapes. Each is an efficient tool, refined thru a half century of world wide use. Each has strength beyond any need, extra strength resulting from endless research and the most modern closely controlled manufacturing methods.

ARMSTRONG TOOL HOLDERS are inexpensive too, for they are produced in great numbers. They are instantly available because they are carried in stock by all leading supply houses in sizes and types for every operation on lathes, planers, slotters and shapers; for standard operations on turret lathes and screw machines. They are profitable in use because they permit the highest speeds and heaviest feeds, and "Save: All Forging, 70% Grinding and 90% High Speed Steel".

ARMSTRONG Lathe and Milling Machine Dogs are permanent tools too. They are drop-forged from special open hearth steel, are heat treated to extreme stiffness and toughness. They have alloy steel screws hardened at the tip to prevent up-setting and have double life, for hubs are made oversize to permit re-tapping.

ARMSTRONG Quality pays over and over again. Write for new S-48 catalog. It offers many opportunities to conserve profits.



ARMSTRONG BROS. TOOL CO.

"The Tool Holder People"

5208 W. ARMSTRONG AVENUE • CHICAGO 30, ILL.

machine and tool blue book Contents

WILLIAM F. SCHLEICHER
Editor

H. L. PURDY
New Equipment Editor

R. C. VAN KAMPEN
President

VINCENT C. HOGREN
Vice President

J. E. HITCHCOCK
Vice President

M. L. YONTS
Secretary

ROBERT C. HADLEY
Art Director

C. E. ELZINGA
Circulation Manager

District Managers

New England and Eastern N. Y.
State: Dan E. Reardon, Box 191,
Newington, Conn., Telephone
New Britain 4-0670

New York, Metropolitan Area: Al-
vin E. Wailes, 55 W. 42nd St.,
New York 18, N. Y., Telephone
Lackawanna 4-4528

Pennsylvania and South Atlantic
States: Raymond J. Sietsema,
44 Revere Road, Apt. 13, Drexel
Hill, Pennsylvania

Michigan and Toledo, Ohio: John
A. Wright, 8630 W. Outer Dr.,
Detroit 19, Mich., Telephone
Kenwood 2-6140

Ohio, Western New York, Western
Pa., Indiana, Kentucky: Henry
J. Smith, 3529 Radcliffe Road,
Cleveland 21, Ohio, Telephone
ERieveur 0550

Middle West: James C. Stewart,
222 E. Willow Ave., Wheaton,
Ill., Telephone Wheaton 3400

Western States: Henry J. Niekerk,
1838 South Emerson St., Denver
2, Colo.

Pacific Coast: R. H. Deibler, 2506
W. 8th St., Los Angeles 5, Calif.,
Telephone Federal 0303

SEPTEMBER, 1949

Published Monthly

Vol. 45 No. 9

Featured in this Issue 67
As the Editor Sees It 69

FEATURE ARTICLES

How Much Does It Cost To Use Radio Frequency Heating?	71
By A. P. Bock	
Letter From England	89
By Robert Hutcheson	
Cam-Operated, Double-Action Roofing Press Increases Production, Lowers Maintenance	96
By Gerald Eldridge Siedman	
Die Innovations for Better Production	105
By Frank Charity	
What Does The Buyer Want	117
By W. J. Peets	
The Sales Engineer's Daily Activity	135
By R. A. Vidinghoff	
The Technique of a Sales Engineering Interview	153
By E. B. MacDonald	

DEPARTMENTS

News of the Industry	175
Bickford Celebrates Anniversary	175
Vermont Tool Builders Hold Show	176
Machine Tool Shipments	178
Appointments and Promotions	182
Available Literature	191
Shop Hints	197
Unusual Use of Forming Machine Solves Heater Production Problem	197
What's New in Metalworking	201
Mechanics Through the Ages	250
Products Index	252
Index to Advertisers	258

Acceptance under section 34.64, P. L. and R. authorized. (Office of
Publication, Hammond, Indiana.)



Copyrighted 1949 By HITCHCOCK PUBLISHING CO.

222 E. Willow Ave., Wheaton, Illinois

Machines "THRIVE" on MULTI-PURPOSE Anti-Scoring LUBRICANT



Highly concentrated. Withstands pressures greater than 50,000 lbs. per sq. in. Free of lead and graphite. Non-corrosive. Originated by CMD. ACCEPT NO SUBSTITUTES.

15 DROPS

Keep A Lathe Humming

1. Dead or live centers
2. Follow Rest
3. Steady Rest
4. Tool Post Screw
5. Lead Screw
6. Wipers
7. Head Stock Bearings
8. Half Nut
9. Quick-Change Gear Box
10. All Apron Gears
11. Chucks
12. Tail Stock Screw
13. Tail Spindle Lock
14. Taper Attachment
15. Knurling Operation

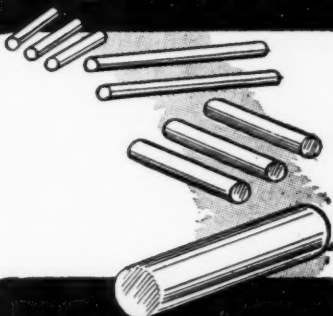


Write for FREE SAMPLE Tubes of CMD Multi-Purpose, Anti-Scoring Lubricants now! Address Dept. 9-BB.

CMD Lubricants are available as oil or grease. Packed in 4 oz. tubes, cans (gallon, 5 gallons) and 55 gallon drums.

CHICAGO MANUFACTURING & DISTRIBUTING CO.
1928 W. 46th STREET CHICAGO 9, ILLINOIS

Precision ROD CUTTING at High Speed



with the New DI-ACRO ROD PARTER

The DI-ACRO Rod Parter further increases the range of "DIE-LESS DUPLICATING" as a real cost-cutting, time-saving production technique so well established by the DI-ACRO Benders, Brakes and Shears.

Do you require precision?—The DI-ACRO Rod Parter holds tolerance to .001" on duplicated cuts. The ends are square, and roundness is maintained.

Do you want speed?—The Rod Parter exceeds output of other methods with equal accuracy, on rods and bars up to $\frac{5}{8}$ ". Torrington Roller Bearings incorporated in an exclusive multiple leverage arrangement provide remarkable ease of operation.

GET "DIE-LESS DUPLICATING" CATALOG!

Shows parts produced without die expense or delay by DI-ACRO Benders, Brakes, Shears, Rod Parters, Notchers, Punches. Send for your free copy.

Pronounced "DIE-ACK-RO"

"PARTS OFF" MANY MATERIALS

All hot and cold rolled rods

Stainless steel

Chrome Molybdenum

Copper

Brass

Aluminum

Bi-metals

Many types of plastics

Fibre Rubber Wood



O'NEIL-IRWIN MFG. CO.

314 EIGHTH AVENUE, LAKE CITY, MINNESOTA

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

2

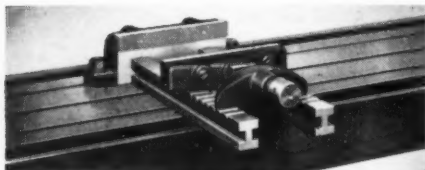
STANDARD CINCINNATI MILLING

Working Together

Close-up of milling operation performed with the aid of two Cincinnati Attachments—20" Circular Milling, and All-Steel Vise. A 10" diameter face milling cutter takes a $\frac{3}{16}$ " depth of cut, at a cutting speed of about 110 feet per minute.



Cincinnati Circular Milling Attachment. 16", 20" and 24" diameter tables. Power and hand feed. Catalog M-1660.



All-Steel Vise. Capacity 10" x 10". Extra long vises available with 24" or 40" openings. Catalog M-1665.

The setup shown here takes a short cut to machine the face and swivel diameter of universal slides. Both surfaces are milled in one rotation of the work. A Cincinnati 20" Circular Milling Attachment supplies the rotary motion, while a Cincinnati All-Steel Vise tightly grips the part. In addition to the short cut in machining, the All-Steel Vise eliminates the need for a special fixture.

¶ These two attachments are ruggedly constructed for heavy milling operations. The Circular Milling Attachment may be mounted on old and current design CINCINNATI Milling Machines, while the All-Steel Vise may be used with many machine tools—millers, shapers and drill presses. Chances are your shop needs these attachments. Our field engineers are at your service.

THE CINCINNATI MILLING MACHINE CO.



CINCINNATI 9, OHIO, U. S. A.

MILLING MACHINES • BROACHING MACHINES • CUTTER SHARPENING MACHINES
FLAME HARDENING MACHINES • OPTICAL PROJECTION PROFILE GRINDERS • CUTTING FLUID

ATTACHMENTS

to Save Time!



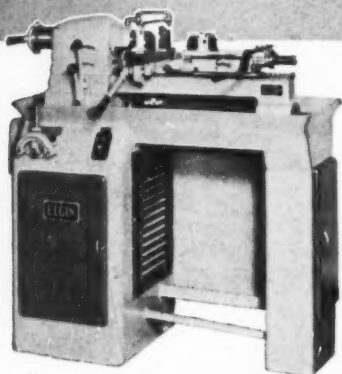
When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

ON SMALL DIAMETER PRECISION PARTS

Elgin

WILL MACHINE THEM

Faster: More Accurate

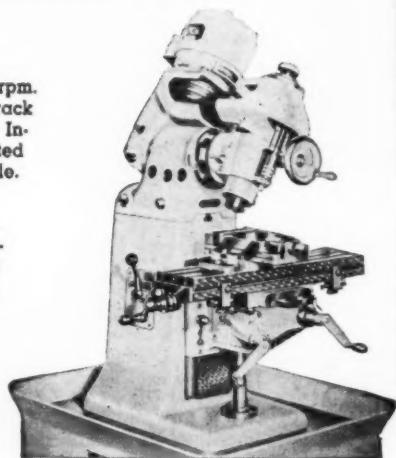


**Elgin Knee Hole Type Hand
Screw Machine**

Variable speed range, 120 to 3800 rpm.
9" swing. 1" collet capacity. Collet rack
inside of motor compartment door. In-
dependent coolant system (5 gal.) mounted
in rear, outside—cleaner, more accessible.

Elgin Vertical Bench Drilling Machine

Preloaded ball bearing spindle. 9/16" col-
let capacity. Five speeds ranging from 400
to 4000 rpm. Vertical travel of spindle,
1 3/4". Table 4 1/8"x18". 90° swivel each
side of center line.



ELGIN TOOL WORKS

1772 Berteau Ave., Chicago 13, Ill.

If your production problems de-
pend on the speed with which
small parts are machined, an
ELGIN may be your answer. The
line of ELGIN High Speed Preci-
sion Bench Tools is designed to
pay you dividends in better ma-
chining results, faster production
and greater versatility. Write for
specifications, prices.

NEW CATALOG



Data on
CINCINNATI
SHAPERS

PROFITABLE
APPLICATIONS
ILLUSTRATED

USEFUL ATTACHMENTS
and SPECIAL EQUIPMENT

Here is the latest information on low cost machining. This 32-page, heavily illustrated catalog contains complete specifications and features of Cincinnati Shapers. Many practical and useful shop applications are illustrated. Cincinnati Shapers give you maximum versatility with minimum investment and minimum tooling cost. Write for your copy.

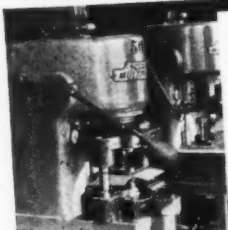
THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO U.S.A.
SHAPERS SHEARS BRAKES

Please send me a copy of
Catalog N-5D on Cincinnati Shapers

Name.....
Company.....
Address.....

More Proof...



SHAVING

Close Tolerance Held
Smooth ram action of Multipress eliminates bumping or jarring of delicate magnetic armature vanes throughout shaving operation. Special shearing tool cuts to fine tolerance with minimum impact upon parts.



RIVETING

Production Increased 40%

Equipped with a six-station indexing table, Multipress speeds assembly of two-piece retainer for ball bearings. Keeps operator's hand safely removed from ram area.



BROACHING

200% Faster

Indexing small shafts used in auto window cranks to spine-broaching station under ram. Multipress triples output, cuts spoilage by permitting cross members to be welded before broaching.



FLARING

Speeds Output 60%

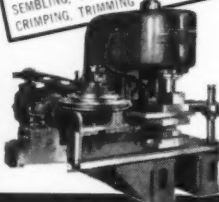
Tubes supporting swinging arms on wardrobe hanger are flared five at a time, instead of singly, when maker switches to Multipress. Accurate pressures avoid either binding or wobbly assemblies.

When you do it with

MULTIPRESS*

you do it for LESS

Multipress with HARMONIC STOCK FEED ACCESSORY turns out up to 50,000 parts per hour from metal strip. It's typical of Multipress equipment for such jobs as: PUNCHING, FORMING, DRAWING, ASSEMBLING, PELLETING, STAKING, CRIMPING, TRIMMING, many more!



FOR GAINS LIKE THESE on any production jobs using controlled pressures up to 35 tons, Multipress is your best bet.

The records are mighty convincing. An endless string of reports on an amazing range of jobs in almost every industry, tell of lower costs, faster production, fewer rejects, safer operation.

In Multipress, you get the smoother, better-controlled working pressures of advanced, oil-hydraulic action—with record-setting production speeds. Multipress also offers many accessories for top efficiency on a wide range of specialized operations. You get equipment "tailor-made" to your exact needs from the full range of Multipress frame sizes, operating controls, and other components. Write for full details.

The DENISON Engineering Co.

1184 Dublin Rd, Columbus 16, Ohio

Ask to see our MOVIE See Multipress in action... how it operates... how others use it!

DENISON
Hydraulic



"SLASH" YOUR SET-UP TIME

WITH THE

TREE

TAPER BORING TOOL

Cut expensive set-up time from hours to a few minutes with the revolutionary TREE taper boring tool. You can use it on your present milling machine, jig borer or boring bar. Write today for complete information. In addition to boring taper holes this tool can be used for —



*Straight boring . . . as shown at left used as offset boring tool.



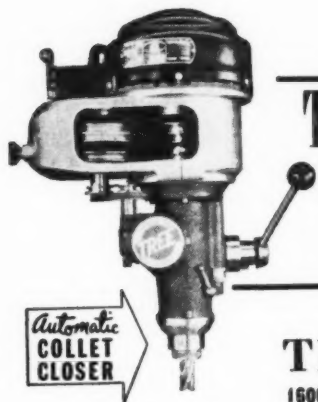
*Facing . . . up to 10" in diameter.



*Outside Turning . . . either straight or tapered up to 8" with extension bar.



Free Literature
On Request



Automatic
COLLET
CLOSER

TREE UNIVERSAL MILLING HEAD ATTACHMENT . . .

All Angle Milling, Drilling & Boring.
Compact Design, 3/4" Collet Capacity.
4" Quill Travel. Power Feed Eight
Speeds—
140-3500 RPM or 210-5200 RPM. Hardened
& Ground Spindle & Quill. Enclosed
Micrometer. Depth Stop.

For Full Information—Write Dept. B

TREE TOOL and DIE WORKS

1600 JUNCTION AVE. • RACINE, WISCONSIN

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

WHICH ONE? NAME YOUR SPINDLE



P-1

8" dia. wheel housing dia. 3 1/4",
over-all length 18 1/2", max. speed
6000 RPM.



P-32T

Direct Motorized Cartridge Type
Grinder Spindle.



P-2500

from 1/4 to 20
HP. Ask for Cat-
alog 58.



INTERNAL

Internal Grinding Spindle for
every requirement. Ask for new
Catalog 57.



P-274

New belt driven Spindle for No. 2
Cincinnati Cutter Grinder.



P-666

Heavy Duty Wheel Head Spindle;
over-all length 25 1/4"; center height
3"; foot type housing 18 1/2" long x
8 1/2" wide; max. speed 4000 RPM.



P-693

High cycle, 16,600 RPM,
totally enclosed fan-cooled
1 HP motorized spindle,
over-all length 16 1/2",
barrel dia. 3".



P-5793

3, 5 or 10 HP, heavy duty
deep hole grinding Spin-
dle; 1800 or 3600 RPM;
barrel dia. and length to
specifications.

POPE

TRADE MARK REG. U.S. PAT. OFF.

builds into these Spindles
the precision performance
and long life that results in
better work and more of it.
Get the facts and figures on
the one best Spindle for
your job.



P-531

Boring Machine Spindle
for Diamond or Carbide
Tools; over-all length 20",
center height 3" base
14 1/2" x 8"; max. speed
5000 RPM.

**SPECIAL SPINDLES -
YOU NAME IT**

Send us your
specifications
for a quotation.

Check
and
Mail
This
Coupon

Pope Machinery Corporation
261 River St., Haverhill, Mass.
Gentlemen:

Please send descriptive literature, specifications and estimates on the
Pope Spindle types checked: P-1..... P-32T..... P-2500.....
INTERNAL..... P-274..... P-666..... P-693..... P-531..... P-5793.....
Special Spindles for

NAME,
POSITION,
COMPANY

No. 62

NEW! SUNICUT 812W and 817W

Dual-Purpose Cutting Oils for Automatic Screw Machine Work

THE NEW Sunicut grades have been thoroughly "Job Proved." Superlative results have been obtained on automatics machining all types of steel and brass at all practical speeds and feeds. These oils serve both as lubricant and cutting fluid. Their use eliminates the problem of cutting oil dilution. They are transparent, non-emulsifying oils compounded with Sun's revolutionary, all-petroleum additive, Petrofac. For further information, fill in and mail the coupon.

SUNICUT 812W is recommended for superior performance on high speed, multiple spindle automatics machining low-carbon steels, alloy steels and brass.

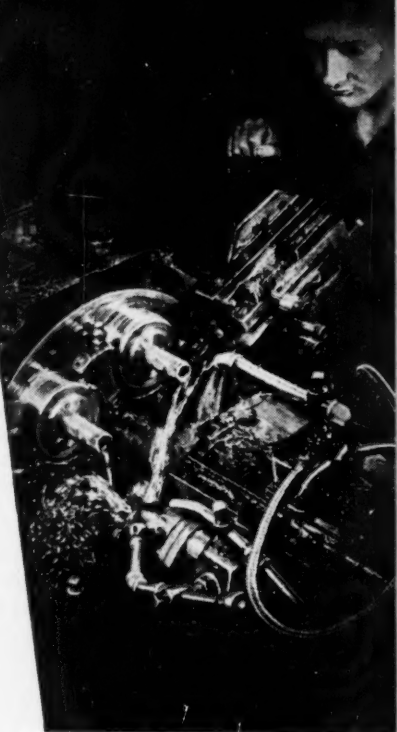
SUNICUT 817W is a higher viscosity oil for use on larger automatics machining all types of steel and brass. It is recommended for severe operations where heavier cuts are taken and higher temperatures maintained.

SUN OIL COMPANY • Philadelphia 3, Pa.

*In Canada: Sun Oil Company, Ltd.
Toronto and Montreal*

SUN PETROLEUM PRODUCTS
"JOB PROVED" IN EVERY INDUSTRY

Sunicut and Petrofac are trademarks of Sun Oil Company



Sun Oil Company, Dept. MT-9
Philadelphia 3, Pa.

Please send me your informative booklet describing the excellent results being obtained in automatic screw machine work with Sunicut 812W and 817W.

Name _____

Title _____

Company _____

Address _____

City _____ Zone _____ State _____



FOR
SPEED
STRENGTH
ECONOMY

FASTEN

THAT NEW

PRODUCT

WITH

Chicago

AUTOMATIC RIVETING

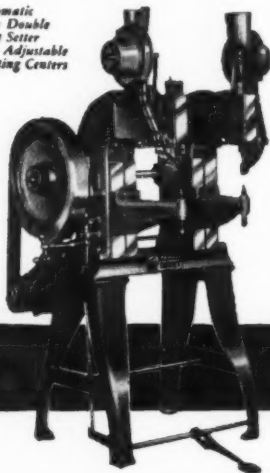
Success or failure of your new product in post war competition may depend on your speed and cost of production. If a fastening operation is involved, Chicago Automatic Riveting will fasten it faster . . . assure strongly fastened assemblies at low unit cost. From one to four tubular rivets or split rivets are fed, inserted and clinched in the split second it takes to release a Chicago foot pedal. Several models of Chicago Riveters are adjusted in just a few minutes to handle different sizes of rivets.

FASTEN ALL TYPES OF MATERIALS

Chicago Automatic Rivet Setters fasten wood to wood, composition to composition, fabric to fabric, metal to metal, leather to leather,

or any combination of these materials. They clinch grommets and eyelets, and insert drive screws as efficiently as they set rivets. Plan now to assure strong fastenings at higher speed and lower costs with Chicago Automatic Riveting. Write today, for catalog information.

*Automatic
Type Double
Rivet Setter
with Adjustable
Riveting Centers*



*Automatic Type
Single Rivet Setter*



LET US ANALYZE YOUR FASTENING PROBLEM

You can learn, without cost or obligation, how your fastening output may be speeded up, and costs reduced. Just send a blueprint or a sample assembly and ask for a fastening analysis. Our engineers will gladly analyze your particular problem. Production rates can be set up from the report they give. Make use of this expert service, as you plan new products.

Chicago Rivet

CHICAGO RIVET & MACHINE CO.
9610 W. Jackson Blvd., Bellwood, Ill. (CHICAGO SUBURB)

NIAGARA

Announces a New, Low-Priced **POWER SHEAR** FOR LIGHT SHEET METAL

• Here is the new high speed Power Shear that sheet metal men have been waiting for. New advanced engineering... new styling... new, easy, fast operation.

**THE GREATEST
DOLLAR for DOLLAR
SHEAR VALUE
YOUR MONEY CAN BUY**

• This new Niagara high speed Power Shear is designed for light sheet metal work. One look at its distinctive styling indicates its modern performance.

Fabricated from unbreakable steel plate, it is engineered to combine strength and stiffness for accurate cutting.

Clear visibility of cutting line through cut-outs and over the top of hold-down facilitates shearing to an accurate layout line.

Niagara Alloy Tool Steel Knives heat treated to a high degree of hardness and toughness and precision ground for accuracy provide keen cutting edges for longer service between grinds.

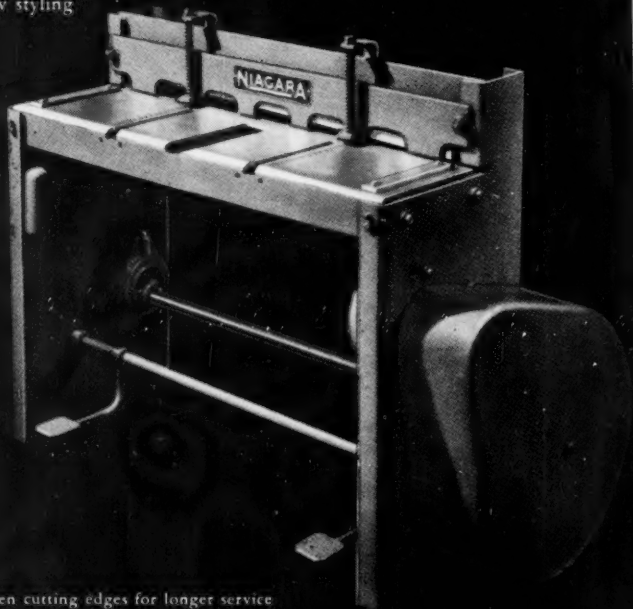
Quick Acting Back Gauge and convenient front and side gauges.

Capacity—20 gauge.

30, 36 and 42 inch cutting lengths

125 cuts per minute.

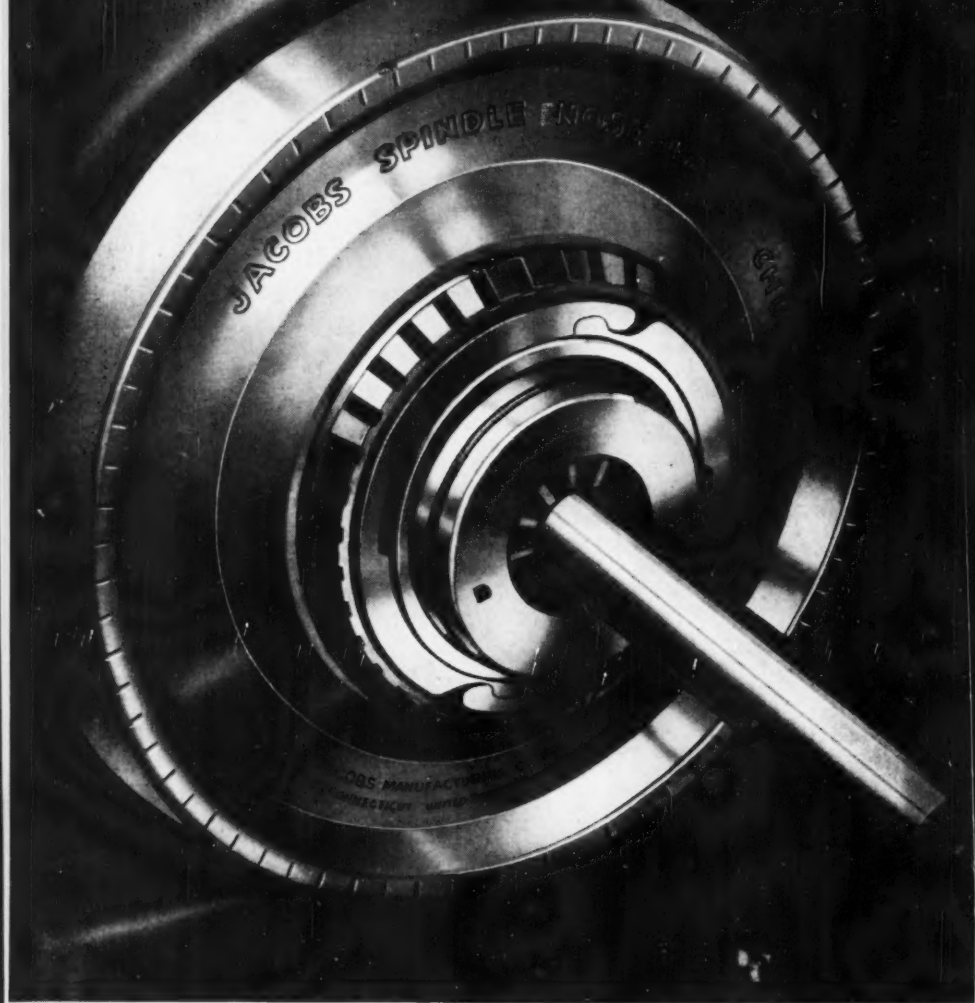
Write for complete information and low prices



See how the new PANCAKE MOTOR DRIVE provides the most compact construction ever obtained... minimum floor space, maximum safety.

NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, NEW YORK
DISTRICT OFFICES: DETROIT • CLEVELAND • NEW YORK

Now...



The new Jacobs Spindle Nose Lathe Collet Chuck.
Introduced at the Chicago Machine Tool Show, now

further refined and extensively field tested and
proudly presented to you through Jacobs Distributors.



The *Jacobs* SPINDLE NOSE LATHE CHUCK

THE JACOBS MANUFACTURING COMPANY • West Hartford 10, Connecticut

If it's a JACOBS... it holds!

Jacobs brings you the most amazing Lathe Collet Chuck in machine tool history!

**NO OTHER LATHE COLLET
CHUCK CAN GIVE YOU ALL
THESE ADVANTAGES:**



SUPER ACCURACY . . .
Precision built to deliver accuracy never before obtainable in collet equipment. *The most accurate collet chuck in the world today.*



TREMENDOUS GRIP . . .
Gives two to four times the gripping power of split steel collets. *You can now use the maximum speeds and feeds of the most modern tool room lathes — safely.*



AMAZING COLLET RANGE . . . Each collet has a full $\frac{1}{8}$ " gripping range. *Eleven Jacobs Rubber-Flex Collets will chuck any bar between $\frac{1}{16}$ " and $1\frac{3}{4}$ " . . . one collet does the work of eight.*



EXTRA DURABILITY . . .

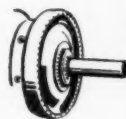
The handwheel is solid aluminum and the forged alloy steel body is hardened and ground. All other parts of the chuck are of alloy steel, *hardened and ground throughout.*



NO FATIGUE . . . A unique impact mechanism allows rigid tightening and easy opening of the chuck *with a flick of the wrist.*



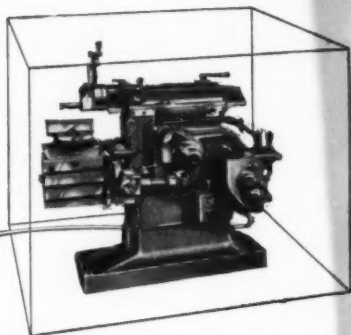
UNEQUALLED ECONOMY . . . You buy a chuck that will perform a **COMPLETE** job of chucking — *you save both on original investment and maintenance.*



DEVELOPED BY JACOBS

. . . This new Spindle Nose Lathe Chuck is a product of Jacobs' development engineers. *The Jacobs Manufacturing Company is the world's foremost producer of drill and tap chucks.*

SEE YOUR JACOBS DISTRIBUTOR — A special eight-page illustrated bulletin is available from your Jacobs Distributor.



Production Package ready to go . . .

Buy a Hendey 12" Universal Crank Shaper—plug it in—it's ready to go—without further purchases, because standard equipment includes table and vise for positioning and indexing work to any angle. You also get flanged mounted motor, mechanical controls on both sides, automatic lubrication, quick-change swivel head, adjustable, preloaded Timken bearings on the crank gear, plus many other features usually considered "extra".

The Hendey 12" Crank Shaper is finished like a fine watch, both inside and out. Here is an accurate, fast money-maker for tool room and production work. Write today for complete details.

BRIEF SPECIFICATIONS

Length of Stroke	12 $\frac{3}{4}$ "
Strokes per minute	14 to 200
Speed changes	8
Vertical travel of tool slide	4 $\frac{1}{2}$ "
Table top tilts either way	15°
Max. distance vise to ram	81 $\frac{1}{2}$ "
Max. rotation of table	360°
Max. vise opening	10 $\frac{1}{2}$ "
Net weight	2825 lbs.
Floor space	46" x 68"

Other Hendey Machines Include

Tool Room Lathes — 9"-12"-14"-16"-18"-20"-24"
Shapers — 12"-16"-20"

THE *hendey* MACHINE COMPANY

MAIN OFFICE & PLANT: TORRINGTON, CONN.

BRANCH OFFICES: New York, Chicago, Boston, Detroit,
Rochester, Los Angeles, San Francisco

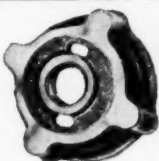
REPRESENTATIVES: Philadelphia, Cleveland, Pittsburgh

hendey

How to bore, turn and face it faster?

Put it on a NEW BRITAIN

Precision Contour Turning and Boring Machine

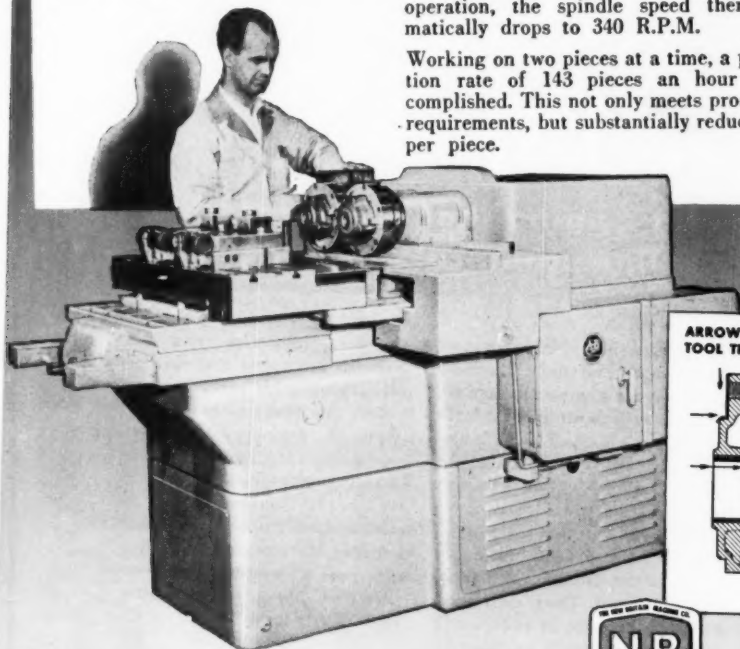


Separate boring and facing operations on this automotive assembly were taking too much time. Looking for a way to get more pieces per hour, the manufacturer investigated every possibility and found

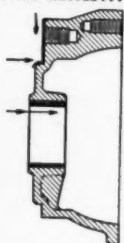
a New Britain Model 37 to be the answer.

It first bores the I.D. of the shaft hole to $\pm .0005$ tolerance and turns the O.D. of the shoulder to $\pm .0007$ at a spindle speed of 680 R.P.M. To handle the interrupted cuts involved in the facing-chamfering operation, the spindle speed then automatically drops to 340 R.P.M.

Working on two pieces at a time, a production rate of 143 pieces an hour is accomplished. This not only meets production requirements, but substantially reduces cost per piece.

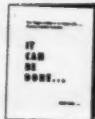


ARROWS INDICATE
TOOL TRAVEL



If your work involves any precision, contour or straight, boring and turning operations...look into these New Britain high production units.

If you would like to see other actual cost histories, write for the folder "It Can Be Done."



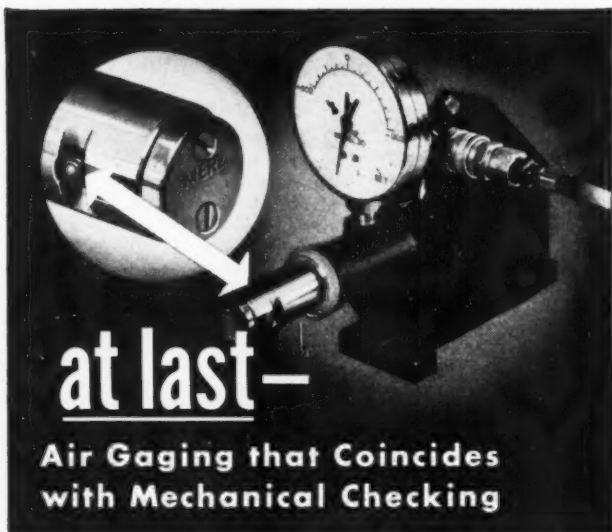
NEW BRITAIN

Automatics

THE NEW BRITAIN MACHINE COMPANY
NEW BRITAIN-GRIDLEY MACHINE DIVISION
NEW BRITAIN, CONNECTICUT

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

the button does it



Merz *New-Matic* Measuring Machines—and only Merz—give you air gaging that coincides *exactly* with mechanical checking. THE EXCLUSIVE SAPPHIRE BUTTON DOES IT! In Merz *New-Matic* Measuring Machines air pressure is metered *only* by the *Sapphire* spindle button. Only the *Sapphire* button contacts the surface measured. Thus, only the *actual* dimension is measured—readings are totally unaffected by surface variations, perforations, key ways, etc. Now—for

the first time ever—you can have all the speed and ease of air gaging with precision accuracy that equals or excels mechanical checking. Now you can place air gages and mechanical gages side-by-side on your production lines—and get identical readings, every time! Let your Merz gaging specialist give you a demonstration—in *your own plant, on your own work*. Write today!

MERZ ENGINEERING COMPANY
Indianapolis 7, Indiana



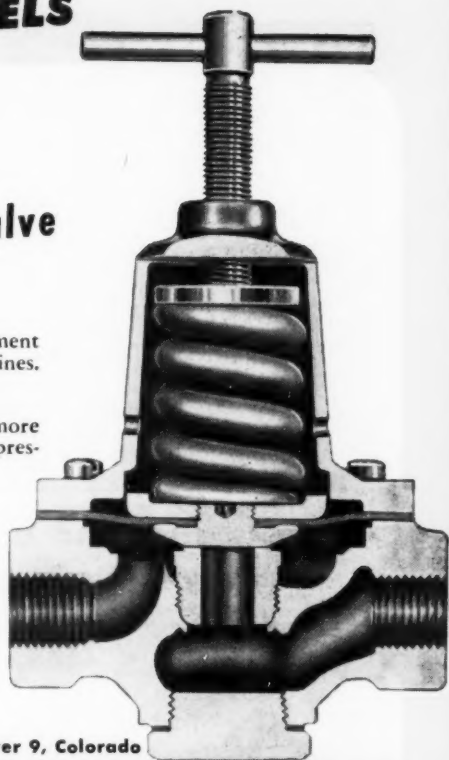
MERZ

REACH **NEW** PERFORMANCE LEVELS

with this

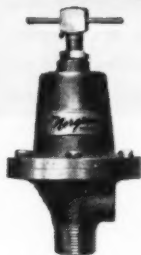
New NORGREN Diaphragm Type Relief Valve

- 1 Automatically prevents damage to equipment through built-up pressures in air and fluid lines.
- 2 Holds its Relief Pressure setting.
- 3 Large, exposed diaphragm area provides more positive valve action for large flow at low pressure rise.
- 4 Metal-to-Metal Valve Seat for pressures up to 250 p.s.i. and for more rugged service. Streamlined profile provides better flow conditions and withstands shock loads for longer life.
- 5 Also available with Rubber-to-Metal Seat for high sensitivity and positive seating with pressures up to 125 p.s.i.
- 6 Six pipe sizes from 1/8" to 1".



C. A. Norgren Co., 222 Santa Fe Drive, Denver 9, Colorado

Other NORGREN RELIEF VALVES FOR A WIDE RANGE OF REQUIREMENTS!

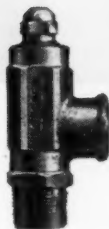


Diaphragm Type for Hot Water and Air Tanks—No. 466. For pressures up to 250 p.s.i. Brass and bronze construction. 3/4" inlet; 1/2" outlet.



General Purpose, Low-Flow Valve—No. 61A2. Small, inexpensive, low capacity relief valve used for many purposes. 5 to 250 p.s.i. 1/4" only.

Water Relief Valve—No. 475. Full floating, stick-proof valve. Rust proof parts. 1/2" and 3/4".



Norgren

Lubricators, Regulators, Filters, Valves,
Hose Assemblies, and Other Air Controls



**You can grind out production records
when you eliminate the dust menace with**

TORIT DUST COLLECTORS



Thousands of TORIT Dust Collectors are now in use. In every type of industry they are trapping abrasive dust at its source and recirculating cleaned air into the room. In large plants and small they are proving economical to own and operate. Compactly designed TORIT Dust Collectors fit all production layouts. They are now being produced in quantity, and sizes and capacities to fit all standard grinding, polishing and cut-off machines are available for immediate delivery. For complete information and latest TORIT catalog write:

TORIT Manufacturing Co.
303 Walnut St. • St. Paul 2, Minn.

No Other Blade Offers You Higher Performance, Lower Sawing Costs

When a hack saw blade promises to cut sawing cost 20% to 50% and delivers what it promises, it's bound to find ready acceptance fast. That's the story of the Millers Falls "Jet-Edge" — the greatest performer in the history of machine blades.

"Jet-Edge" has already proved itself in metalworking plants throughout the country. It's rugged, unbreakable, safer to use. Customers tell us it outperforms the best blades they've ever tried. The super high speed edge

welded to an extra strong back is the reason why "Jet-Edge" stands up, even under toughest cutting conditions.

For a real revelation in economy and performance, let us give you a "Jet-Edge" demonstration on your own work and in your own hack saw machines. We're sure you'll find it's an eye-opener to actually see what this amazing blade can accomplish. Just write, suggesting a date, and we'll be there. No obligation, of course.

MILLERS FALLS COMPANY •

GREENFIELD, MASSACHUSETTS

MILLERS FALLS
TOOLS

THERE'S NOTHING LIKE IT!
In addition to the sensational "Jet-Edge" blade, let us demonstrate the "Blu-Mol" Tensiometer. This unique device greatly increases cutting efficiency and life of any blade. Easily installed on all types of machines, it assures constant, correct tension . . . protects blades against shock . . . promotes faster cutting . . . improves accuracy.

MILLERS FALLS "JET-EDGE" BLADES

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

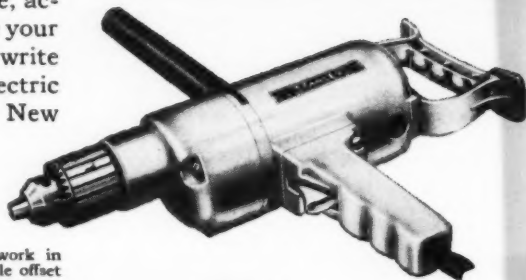
25

Speed up

MAINTENANCE WORK

AND ODD PRODUCTION JOBS

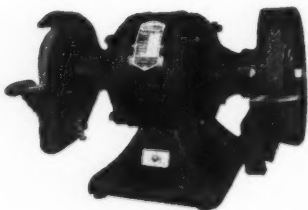
Three Stanley Electric Tools that cut corners on time-consuming jobs. Easy to use, accurate, long wearing. See your industrial distributor or write for catalog. Stanley Electric Tools, 512 Myrtle St., New Britain, Conn.



New $\frac{1}{2}$ " Electric Drill No. 112. For work in hard-to-get-at places. Chuck spindle offset permits operator to drill in close quarters without removing pipe or spade handles. Tough aluminum alloy housing, thrust ball bearing on spindle, automatic release safety switch, alloy steel gears, heavy rubber-covered 3-wire cable.



New Tiny 218 UNISHEAR. Weighs little more than a pair of snips but cuts faster, cleaner, easier. Needs only guiding. Cuts right to the line . . . curves, angles, notches . . . with hairline accuracy. Strong aluminum alloy housing, slide-operated switch, duplex handle.



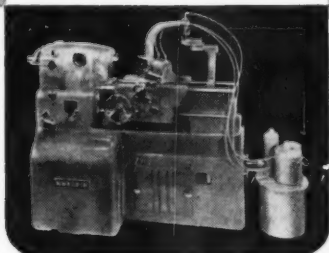
New Bench Grinder No. 266. $\frac{3}{4}$ h.p., 6" wheels. Full ball bearing construction, sealed against dirt. Adjustable tool rests permit use at any point of wheel circumference. Extended frame gives large working area around wheels. Guards designed to provide ample room for wire brush wheels.

STANLEY

Reg. U.S. Pat. Off.

HARDWARE • HAND TOOLS • ELECTRIC TOOLS • STEEL STRAPPING

Air-Gage Tracing of lens-laps, both male and female, provides an excellent example of the accuracy and finish.



NOW!

All the Advantages of
AIR-GAGE TRACING
Available for
SMALL, HIGH-SPEED WORK

• Here's a new Monarch high-speed contour turning team to *push your costs way down.*

The proved advantages of Air-Gage Tracing now are available on the famous Monarch high-speed 10" EE Precision Manufacturing Lathe.

By the exclusive Air-Gage Tracing method you can turn step shafts; turn, bore and face contours of innumerable kinds. This is done in a fraction of the usual machining time, at a fraction of normal costs—and with better accuracy and finish. Let us supply you with complete details.

THE MONARCH MACHINE TOOL CO., Sidney, Ohio



FOR A GOOD TURN FASTER — TURN TO MONARCH

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK



FOR **MAN-SIZED** JOBS
YOU NEED **MAN-SIZED**

**UNITED STATES
ELECTRICAL TOOLS**

EVERY UNITED STATES ELECTRICAL TOOL is designed and built for performance under conditions which would overtax "ordinary" tools. You get maximum results for minimum costs . . . and America's most complete line enables you to choose just what you need in your shop for production or maintenance.

**MEET EVERY DEMAND
FOR PERFORMANCE
AND ECONOMY**



**YOUR JOBBER
CAN SUPPLY YOU
FROM STOCK**



Model XX

PRECISION LATHE GRINDER

For internal and external grinding. Ball-bearing grinding wheel spindles are interchangeable. For accurate work with lathe, planer, boring mill, milling machines, etc. Can be used in vertical or horizontal positions.

The UNITED STATES ELECTRICAL TOOL Co.
CINCINNATI, OHIO

BALAS PUSHERS

THE WEATHERHEAD COMPANY

Gasoline and Oil Proof Flexible Hoses
Check Controls, Down Cocks, Tail Bearings
Punch Press and Automatic Screw
Machine Products

ANGOLA
INDIANA

July 15, 1949

John R. Cox, Managing Partner
The Balas Collet Manufacturing Co.
1557 East 27th Street
Cleveland 14, Ohio

Dear John:

On December 29, I received five of your #16072 9/16 Hex Solder Type Heavy Duty Pushers for davenport machines. We installed these in the davenport on January 15. This machine was run continually during two eight-hour shifts over since then, and has produced in excess of three million parts.

One of these pushers cracked on July 1; the other four are still in the machine running. Also, this machine is running in a cycle of 1.8 machining the enclosed sample complete, including pick-up and burring.

In my twenty-two years in the screw machine business, I have never seen a record to equal this, and I feel that we will be able to cut our pusher costs at least in half by further application of these pushers.

Very truly yours,

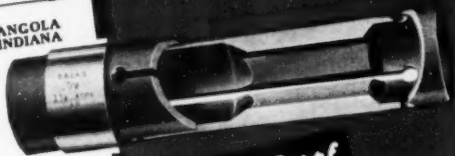
THE WEATHERHEAD COMPANY

Verne F. Nelson
Verne F. Nelson
Manager, Angola Division

VFN:mak
Encl.

Cut Costs in Half!

SAYS LEADING SCREW MACHINE
PRODUCTS MANUFACTURER



Here's Proof

How You, too, Can Eliminate Down-Time and Do Better Work...

Believe it or not...this is not an unusual record for Balas Products! Hundreds of equally well known manufacturers are getting more and better production at far lower costs with Balas Collets, Feed Fingers and "Martin" Master Collets. You, too, can increase the performance of your machines and eliminate "down-time" by specifying "Balas" when you order collets and pushers.

Balas Heavy Duty Cage Type Pushers are superior products because they are made of regular collet steel and are machined to size and shape on all dimensions. This makes them more rugged and results in longer bearings conforming perfectly to the shape of the material. Solder or screw-in types are available for any shape bar stock.

Find out how Balas can save money for you. Send for price list and catalog!



BALAS COLLET MANUFACTURING CO.
1561 EAST 27th STREET • CLEVELAND 14, OHIO

BALAS COLLET MANUFACTURING CO. 1561 E. 27th Street, Cleveland 14, Ohio
Please send copy of New Balas Catalog and Price List

NAME _____

TITLE _____

COMPANY _____

ADDRESS _____

CITY _____

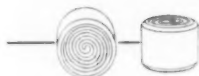
STATE _____



When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

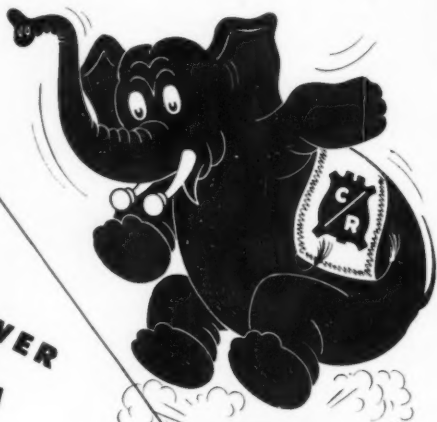
29

RAWHIDE gives you *more* in soft hammers and mallets. And *Chicago Rawhide* gives you exceptional power and maximum protection. C/R hammers and mallets absorb shock, deliver powerful blows, protect finished surfaces and stand up under tough use. For hammers and mallets that never split, crumble or mushroom, always ask for *Chicago Rawhide*.



C/R Hammers have malleable iron heads with replaceable coiled rawhide faces.

**POWER
PROTECTION
LONG LIFE
DURABILITY
TOUGHNESS
BALANCE**



CHICAGO *Rawhide* **MFG.CO.**

1321 ELSTON AVENUE

CHICAGO 22, ILLINOIS

Other C/R maintenance products are: round, flat, twist belting; belt pins and lacings; gears, pinions, gear blanks; aprons, hand leathers; hydraulic packings.



Craftsmanship

AT 60% LOWER COST

With **OLIVER**
DIE MAKERS

Craftsmanship is one thing—needlessly expensive hand labor is something else again. If you are still using hand methods of die-making, your eyes will be opened by the savings which can be effected by using Oliver Diemakers in your plant.



**OLIVER
OF
ADRIAN**

Without sacrificing accuracy and precision, you can save up to 60% over your present methods. Oliver Diemakers, by sawing and filing to remove surplus metal, save much time and labor—can be operated by medium skilled workers.

Two models are shown here. The Bench Model S-1 is a single speed Diemaker for use with tool steel up to 1" thick. The Heavy Duty Model has six speeds, works in metal up to 3" thick, has variable stroke to 5", plus hydraulic feed.

WRITE FOR LITERATURE

Write for illustrated folders on these and other Oliver Products

OLIVER INSTRUMENT CO.

1408 E. MAUMEE

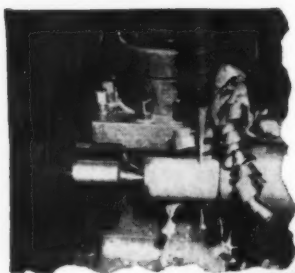
ADRIAN, MICH.

IMPROVE YOUR TOOLROOM
IT'S THE BACKBONE
OF PRODUCTION



AUTOMATIC DRILL GRINDERS—
TOOL & CUTTER GRINDERS—DRILL
POINT THINNERS—TEMPLATE
TOOL GRINDERS—FACE MILL
GRINDERS—DIEMAKING MACHINES

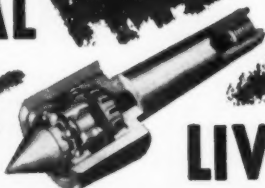
When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK



**SAVE
UP TO
50%!**

IDEAL

TURN
WITH THE
WORK



**LIVE
CENTERS**

- NO GOUGING OR BURNING
- DEEPER CUTS—
- FASTER SPEEDS
- HIGH ACCURACY

Illustration shows the IDEAL Male type Live Center. Female and Pipe type Centers also available.

Also Heavy Duty Live Center — built to carry heavy loads. Accurate to .0005.

Lathe and man-hour output both go up, quality of work is consistently improved with IDEAL Live Centers. Users report savings up to 50%.

IDEAL Live Centers do away with burned centers and scored work. They can't grab and cause gouging. You can take deeper cuts, can step up lathe turning speeds safely.

IDEAL Live Centers *safeguard accuracy*. Unique bearing arrangement, short overhang and precision construction let you work to closer tolerances, give you every live center advantage. Because they are a "sure shot" for lagging production and high costs, IDEAL Live Centers are a 2-to-1 favorite over all others. Get the facts today.

IDEAL

DUST COLLECTOR



Easy to install. Efficiently removes abrasive dust, metal particles, etc. Two inlets, 500 cfm. capacity. Recirculates warm air — saves heat.

IDEAL

DEMAGNETIZERS



Simplify demagnetizing of work from magnetic chucks, also tools, drills, etc. Increase service life of tools. Two types, three models — one for every use.

IDEAL

ETCHERS



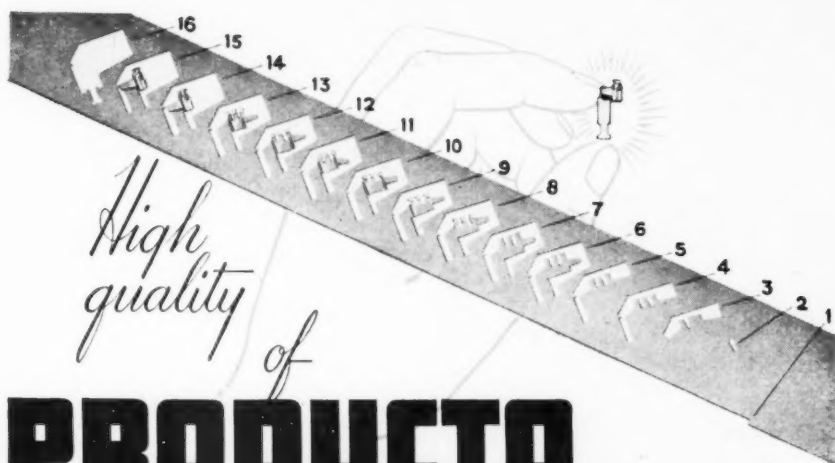
Instantly marks anything made of iron, steel or their alloys. Burns smooth, permanent mark. Eliminates expense of name plates and tags. Pays for itself a hundred times. Three models — for every type work.

IDEAL

SEE YOUR LOCAL IDEAL DISTRIBUTOR — OR WRITE US

IDEAL INDUSTRIES, Inc. SYCAMORE, ILLINOIS

Canadian Distributor: Irving Smith, Ltd., Montreal



*High
quality
of*

PRODUCTO DIE SET

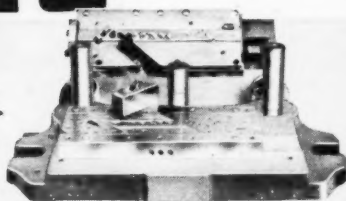
**PERMITS CLOSE TOLERANCE
PROGRESSIVE DIE JOB**

This tiny (.502" overall) electrical connector for a miniature radio tube was stamped and curled to form a wire gripping tube from a copper strip 1" wide, .010" thick. The 16 station progressive die* was mounted on a Producto Die Set, so highly accurate that die sections were profile ground to $\pm .0003$ " and

punches made to fit with clearance of .0002" between punch and die. Only the precision quality of this Producto Die Set allows such close tolerance work.

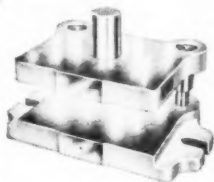
Call "Producto" in Classified Telephone Directory for Catalog or Special Die Sets...fast delivery...highest quality.

* Die designed and made by Globe Tool & Gauge Works, Boston, for National Co., Inc., Malden, Mass.



OPERATIONS CHART

1. Notch (for guide)
2. Pierce hole
3. Pierce to shape
4. Pierce to shape
5. Idle
6. Pierce for tube
7. Idle
8. Preform fingers
9. Form tube
10. Form tube
11. Precurl, started
12. Precurl, continued
13. Idle
14. Curl completed (45° angle plunger)
15. Idle
16. Blank out



THE PRODUCTO MACHINE COMPANY

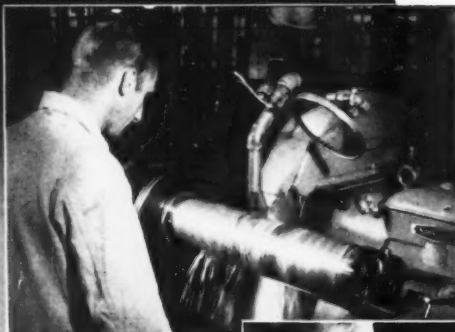
960 HOUSATONIC AVE., BRIDGEPORT 1, CONN.

The NORTON Wheel

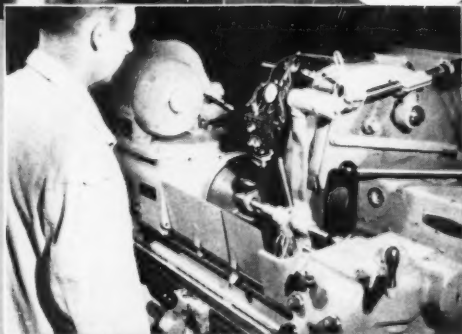
The Unit that Insures

RUGGED — For Heavy Stock Removal

PRECISE — For Close Tolerances and Fine Finish



RUGGED—Hogging stock from a Machine casting



PRECISE—Grinding a diameter on a shaft to extremely close tolerances

THE grinding wheel spindle unit is the heart of a precision grinder. On its qualities depends the ability of the grinder to give ENDURING PRECISION.

The Norton Wheel Spindle Unit is the heart of Norton Cylindrical Grinders from 4" to 36" swing capacity. It has time-proved its ability to deliver ENDURING PRECISION in thousands of plants throughout the world.

Improved and refined in the new Type CTU and other Norton Grinders, this famous Norton "Heart" provides the ruggedness for heavy stock removal, and the precision for finest finishes and closest tolerances.

It gives Norton Grinders the ENDURING PRECISION to enable you to meet today's—and tomorrow's —tough competitive conditions

NORTON

GRINDERS and LAPPERS

Abrasives Grinding Wheels Grinding and Lapping Machines Refractories Porous Mediums Non-slip Floors Norbide Products Labeling Machines

Spindle Unit...

ENDURING PRECISION

DESIGN HIGHLIGHTS

● In the Norton Wheel Spindle Unit design, a ruggedly proportioned spindle of toughened, wear-resistant steel runs on a film of filtered lubricant in long, heavy, hard-bronze bearings. These bearings provide support over practically the entire circumference of the spindle.

● This Norton unit offers extreme resistance to wheel pressures, belt pulls, and to those other factors that tend to reduce precision and shorten life.

● Long and continuous bearing surfaces confer extreme rigidity and insure low unit pressure. This low unit pressure helps to maintain adequate lubrication and sustains efficiency.

● This heavy duty bearing design, plus precision bored casings, assures permanent alignment between wheel spindle and work center-lines.

Continued research has not yet produced a better or more reliable spindle unit

FEATURES OF THE NORTON WHEEL SPINDLE UNIT

● Over 50% of spindle body supported in two super-duty size, hard bronze bearings.

● The Norton spindle stays on its fixed center-line—no shifting is possible.

● Spindle is rigidly supported over practically its entire circumference.

● Bearing length over twice the diameter—a very desirable feature.

● Bearings automatically flooded by filtered lubricant.

● Heavy-duty end thrust bearing at center of spindle is flood lubricated.

● Self-contained lubricating unit within wheel spindle housing delivers film of filtered lubricant between spindle and bearings.

● Automatic lubricant flow clearly visible through bull's-eyes—an important safety feature.

● Extremely low unit pressure due to long and continuous bearing surfaces.

● Wheel speed changes possible without readjustment of bearings.

● Ruggedly proportioned spindle is toughened to resist wear.

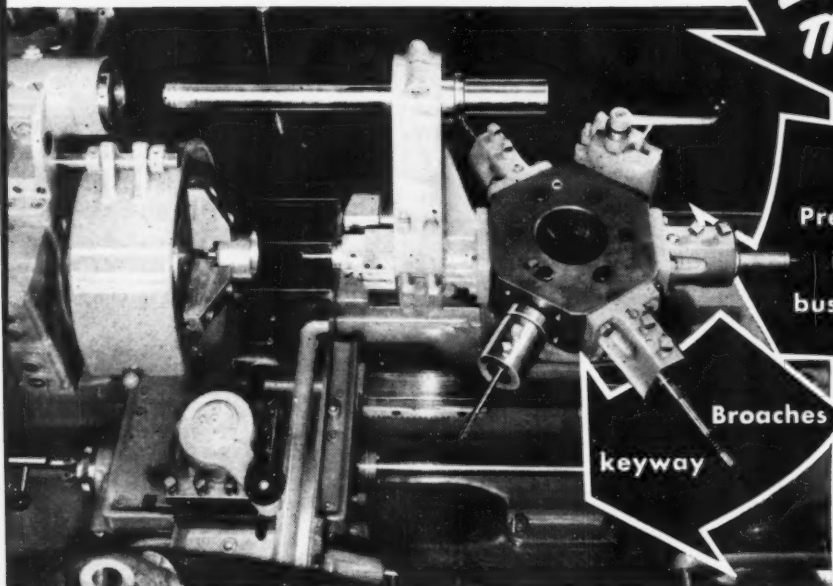
● An unmatched service record—many thousands in use. Less than 1% replacement bearings sold.

Turret Lathe Ideas -

LIKE
THIS

Presses
in
bushing

Broaches
keyway



Save you time and money... **INCREASE PRODUCTION!**

Darned clever, these production men!

Note the use of this Gisholt No. 3 Ram Type Turret Lathe. In addition to handling all the typical drilling, boring, facing and reaming operations on the inside of a small motor housing, this turret lathe is used to:

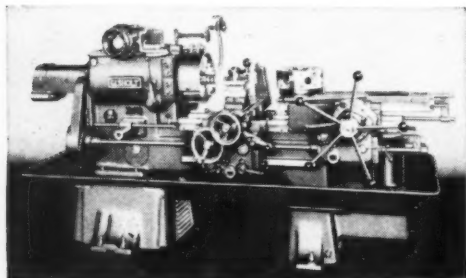
Broach the keyway
Press in a bushing
Finish machine in place

The entire operation on these parts takes only 1.37 minutes. Figure the time and cost saved in not having to transfer parts to other machines—or other departments—for these operations.

Don't overlook the many ways you can get greater production from your turret lathes. Gisholt engineers have all kinds of money-saving ideas to help you with your problems. Ask one to call. Or write us.

GISHOLT MACHINE COMPANY
Madison 10, Wis.

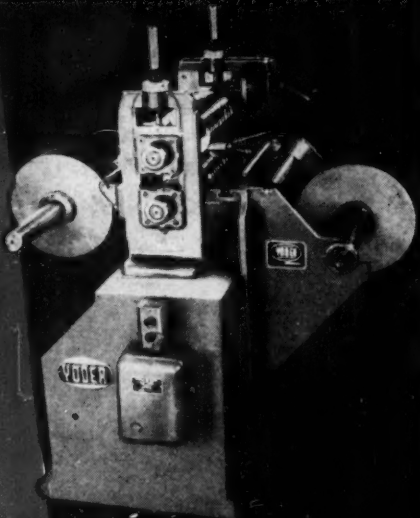
Gisholt No. 3 Universal Ram
Type Turret Lathe



THE GISHOLT ROUND TABLE
represents the collective
experience of specialists in
the machining, surface-
finishing and balancing
of round and partly round
parts. Your problems are
welcomed here.

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

Announcing
a small new
COIL SLITTER
complete with Coil
Holder and Recoiler
for
Coils up to 250 lbs.
18" wide. Stock from
.003" to .062" thick



Precision-built for Highest Slitting Accuracy

This new Yoder No. L-18 is easily the finest small slitter ever built, complete with Coil Holder and Recoiler. It embodies the same sturdy, high class, basic features as the larger standardized Yoder slitters, including adjustable anti-friction bearings, micrometer-controlled arbor adjustment, toggle gearing permitting arbor adjustments up to 2" while maintaining full gear mesh, etc.

Its speed, 150 f.p.m., easy, accurate controls and adjustments, make it the slitter par excellence for high

production in slitting thin ferrous and non-ferrous stock to the closest tolerances.

Being assembled largely from parts already standardized in Yoder Cold Roll Forming Machines, it can be offered at a price which makes it a real buy for small and large shops needing a high class small slitter.

Complete information on request.

THE YODER COMPANY

5509 Walworth Avenue • Cleveland 2, Ohio



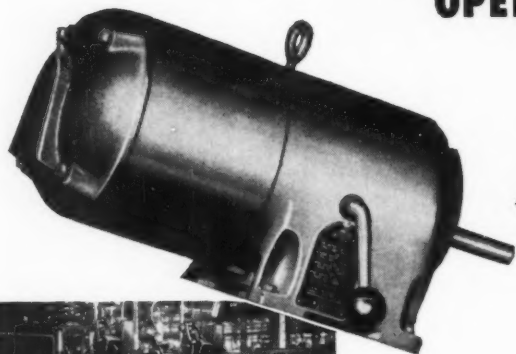
**ROLL FORMING, TUBE MILL AND
SLITTING MACHINERY**

41 YEARS' LEADERSHIP • COILING • SLITTING • FORMING • EMBOSsing • CURVING • WELDING • CUTTING-OFF

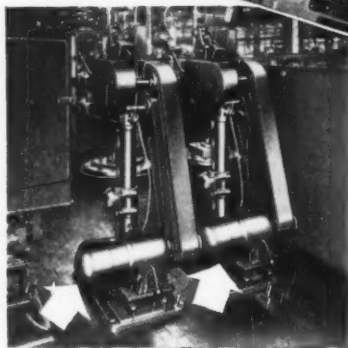
When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

37

HERE IS THE ANSWER TO INCREASING PRODUCTION WHILE LOWERING OPERATING COSTS



THE LIMA GEARSHIFT DRIVE

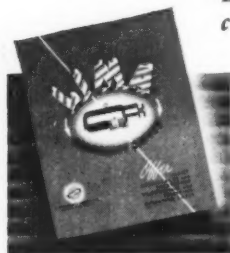


Above view shows Lima Drives applied to two Garvin Automatic Tappers. Photo courtesy International Harvester Company.

LIMA GEARSHIFT DRIVES have very definitely proven themselves to be the answer to lower operating costs and greater flexibility of machine operations. LIMA GEARSHIFT DRIVES are widely accepted by manufacturers of original equipment, as an integral "selective-speed" power source.

LIMA DRIVES are available for operation on single phase power supplies in $\frac{1}{2}$ and $\frac{3}{4}$ hp sizes and for polyphase in sizes from $\frac{1}{2}$ to 25 hp.

LIMA'S New Illustrated Drive Bulletin DB-1 is just off the press—send for your copy today.



LIMA



Representation in principal cities

THE LIMA ELECTRIC MOTOR COMPANY

214 Findlay Road,

Lima, Ohio

ELECTRIC
4-WAY
AIR CONTROL
VALVE
Disc Type!

PUSH BUTTON OR AUTOMATIC

Control!

FOR

- **AIR CYLINDERS**
- **AIR CIRCUITS**
- **AIR OPERATED PRESSES**

TYPE 1 — Advance and return cylinder strokes controlled through two push buttons or switches.

TYPE 2 — Single push button control for advance; automatic return.



DIRECTAIR

Save Time! Boost Production!

Speed up operations! — You can do it with this new electric valve that makes effortless, labor saving *push button* or *automatic control* SIMPLE... DEPENDABLE... and ECONOMIC for a wide variety of applications where compressed air is used for power.

It's SIMPLE to use. Fits directly into air supply line. No relays or pilot lines needed. *Ideal* for remote control... interlock or sequence operation... building into equipment.

It's DEPENDABLE. Built to withstand hardest kind of

service. Quiet disc type valve — positively air-tight; self-lapping. Pilot controlled; piston operated. Continuously rated solenoids. Capable of 180 cycles per minute, or more.

It's ECONOMICAL! Small and compact. 10 watt solenoids — low power requirements; only momentary contact needed. Simple electrical connections with plant wiring. Sizes $\frac{3}{8}$ ", $\frac{1}{2}$ ", and $\frac{3}{4}$ ". For any pressure from 25 to 150 p.s.i. *Complete information on request.* HANNIFIN CORPORATION, 1129 South Kilbourn Avenue, Chicago 24, Illinois.



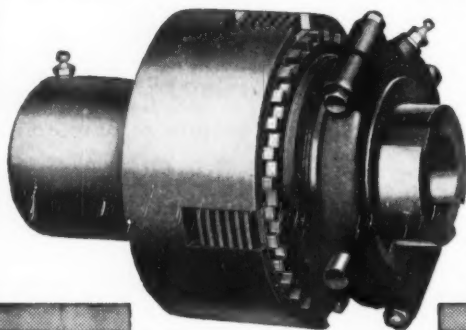
A New **HANNIFIN** *Product*

Send for New Bulletin No. 230

HERE'S HOW TO SAVE

- on power
- on initial cost
- on maintenance

CONWAY CLUTCHES



With a clutch for every purpose and widest possible flexibility and adaptability, these "power-misers" really "bring the mostest results for the leastest costs." Any plant engineer can tell you that CONWAY CLUTCHES are really tops.

Model ZL805 6-plate sleeve clutch.
Efficient in oil.

Specialized features include:

BASIC MATERIALS
BASIC DESIGNS
BASIC ENGINEERING

STANDARDIZED,
INTERCHANGEABLE PARTS

1/4 hp to 300 hp; 10 to 2300 rpm.

WRITE FOR BULLETINS

The CONWAY CLUTCH CO.

2745 Colerain Ave.

Cincinnati 25, Ohio

**HERE'S HELP
FROM**

haskins

**Improve Product
Quality, Cut
Production Costs!**

Haskins Flexible Shaft Machines speedily and efficiently perform grinding, sanding, filing, wire brushing, buffing and polishing for die, mold, and patternmaking, stainless steel and general fabricating. And remember, with flexible shaft tools, the operator handles only the lightweight handpiece—the heavy motor is conveniently located 6 feet away. Operator works faster, with less fatigue. Haskins makes a complete line—for details, write R. G. Haskins Co., 2645 W. Harrison St., Chicago 2, Ill.

haskins
FLEXIBLE SHAFT EQUIPMENT

Haskins VB-2 develops up to 18,000 r.p.m. free speed. For general light production work.



Haskins HS-4 for general die shop work... 1/2 h.p., six speed countershaft develops up to 7800 r.p.m.



Haskins RA-5 for lacquer polishing, rubbing and sanding operations. Heavy-duty 1/2 h.p. direct drive speeds to 3425 r.p.m.



Haskins SPH-6 for stainless steel grinding, sanding, buffing, etc. 1 h.p. motor; four-speed countershaft; speeds to 3400 r.p.m.



Haskins HS-7 1 h.p. motor, four-speed countershaft develops up to 3100 r.p.m. For heavy grinding, sanding, wire brushing and polishing operations.

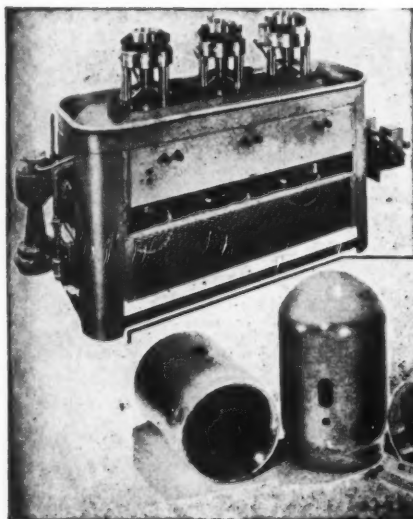


"Tap it with a
PRUTTON

Tapmaster"

**3 TAPPING
MACHINES
IN**

1



These GAS CYLINDER CAPS were tapped at a rate of 300-350 per hour on a No. 30 Tapmaster. Tap is a $3\frac{1}{2}$ " x 11 pitch of the solid adjustable type. Built for heavy duty tapping, this machine handles the range of $1\frac{1}{2}$ " to 4", with production figures varying between 300 and 500 pieces per hour.

WRITE FOR . . .

. . . DESCRIPTIVE BULLETIN

D. H. PRUTTON MACHINE & TOOL CO.

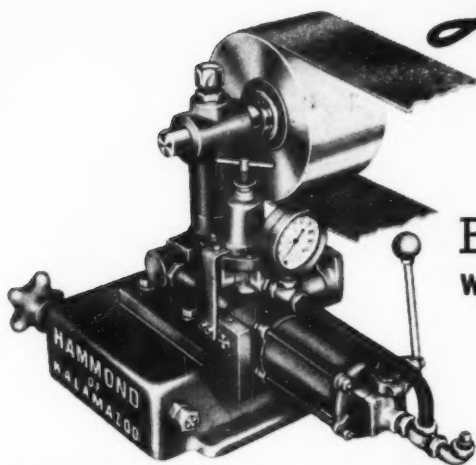
5295 W. 130th St.

CLEVELAND 11, OHIO

Hammond
OF KALAMAZOO

AIR

Bench Backstand WITH AIR BELT TENSIONING

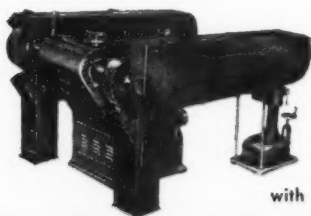


The Model 6-A Air Backstand SAVES ABRASIVE BELTS — INCREASES PRODUCTION — CONSERVES FLOOR SPACE.

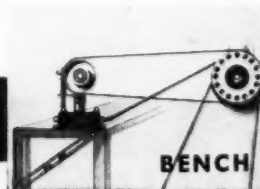
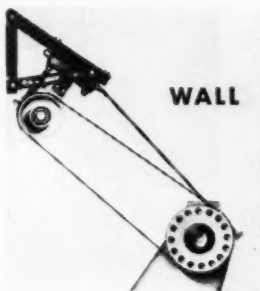
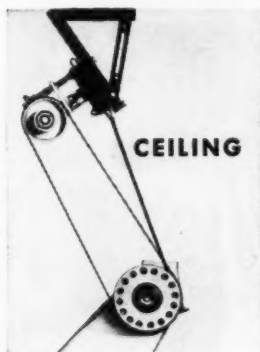
An abrasive belt stretches as used. If correct tension is constantly maintained the belt will last longer and maximum production obtained.

The Model 6-A Air Cylinder tensioning backstand maintains the correct tension throughout the abrasive belt life and automatically adjusts belt stretch to a fraction of an inch.

Write for catalog showing the Model 6-A and our complete line of 9 bench and floor-type backstands.



Another popular installation—
Model VRO Variable speed
(1500-3000 RPM)
polishing lathe
with Model 3-R Backstand.

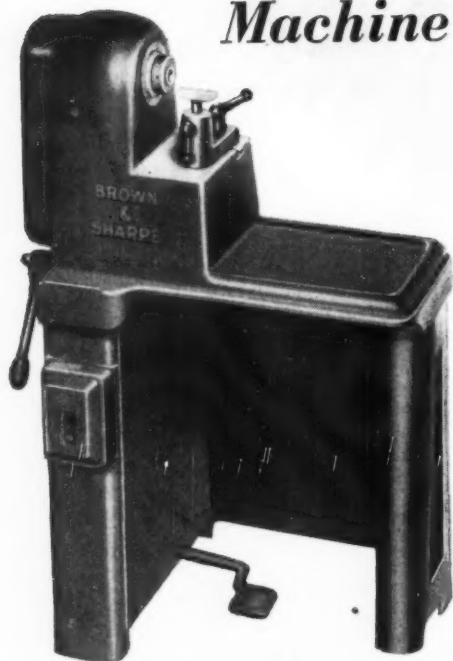


Hammond Machinery Builders

1614 DOUGLAS AVE. • KALAMAZOO, MICHIGAN

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

***NEW
Polishing
and
Finishing
Machine***



CAPACITY . . . spindle takes collets for up to 1" diameter stock. Swing over bed $9\frac{3}{4}$ " diameter; over rest, $7\frac{3}{4}$ " diameter.



BROWN &

Here's 3-way improvement for your screw machine department

- *Faster Burring*
- *Faster Polishing*
- *Faster Filing*

THIS NEW ADDITION to the Brown & Sharpe line has 3 special features that make it extremely advantageous for general, all-around polishing and finishing of small parts.

1. A compact, completely self-contained design . . . permits operator to work fast and easily when sitting or standing. Foot pedal control of collet and brake leaves operator's hands free to load, perform necessary operations and remove work.
2. Three spindle speeds . . . up to 4500 r.p.m. . . . suitable for wide range of materials and operations.
3. Only the spindle is started and stopped for inserting and removing work—reducing inertia, wear and motor heating. Constant speed motor runs continuously with V-belt drive released by foot pedal.

Get complete information on these and other efficiency-boosting advantages. Write for new Bulletin. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

SHARPE



Good Business CARDS!

CUTTING METAL?

Whenever, wherever there is metal cutting to be done, it's good business to welcome the Circle R representative who carries these cards!

SEE THESE **CIRCLE R** REPRESENTATIVES:

STATE OF ARIZONA

Jahn Di Eugenio
733 W. Lincoln Street, Phoenix

LOWER CALIFORNIA

Circular Tool Supply Co.
2816 S. Santa Fe Ave., Los Angeles

STATE OF ILLINOIS

Donald Robertson & Co.
549 W. Randolph Street, Chicago

STATE OF INDIANA

Walter F. Greene Associates
3201 N. Illinois Street, Indianapolis

NEW ENGLAND STATES

F. J. McMillen
765 Allens Ave., Providence, R. I.

STATE OF MICHIGAN

Andrew Spruce
2411 14th Street, Detroit

STATE OF MINNESOTA

Walter R. Hammond Co.
1419 Wash'g't'n Ave., So., Minneapolis

STATE OF MISSOURI

B. C. MacDonald & Co.
1592 Arcade Bldg., St. Louis

SOUTHERN NEW JERSEY

EASTERN PENNSYLVANIA

General Tool Sales Co.
3945 No. Broad Street, Philadelphia

NEW YORK CITY

METROPOLITAN AREA

F. A. Brady, Inc.
30 Church Street, N. Y. C.

NORTHEASTERN OHIO

Production Tool Co.
2479 Lee Blvd., Cleveland

UPPER NEW YORK STATE

James O. Horne
528 Powers Building, Rochester

NORTHWESTERN OHIO

Peerless Tool Service, Inc.
3628 Detroit Avenue, Toledo

SOUTHERN OHIO

Robert W. Gloyd
1217 E. 3rd Street, Dayton

WESTERN PENNSYLVANIA

Voss Machinery Co.
1800 Sarah Street, Pittsburgh

STATE OF WISCONSIN

Wisconsin Tool & Machine Co.
8829 West North Avenue, Milwaukee

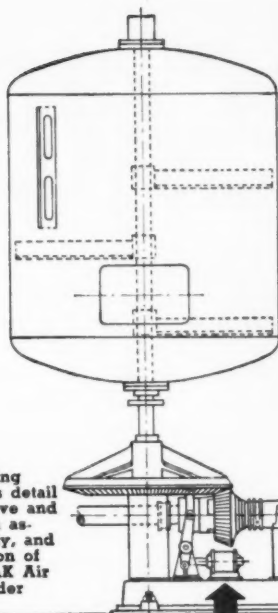
EXPORT DEPARTMENT

21 State Street, New York 4, N. Y.

Why good business? Simply because these men represent the most reliable name in circular metal cutting tools . . . Circle R!

CIRCULAR TOOL CO., INC.

PROVIDENCE 5, RHODE ISLAND



Drawing shows detail of drive and clutch assembly, and location of Nopak Air Cylinder

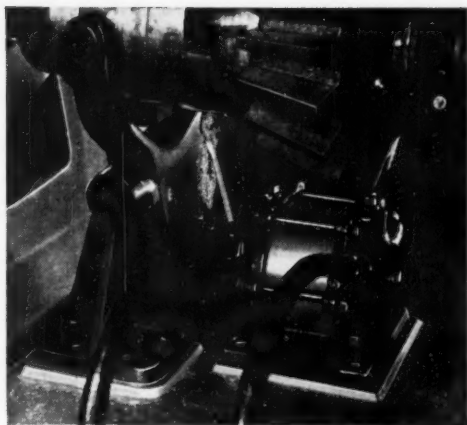
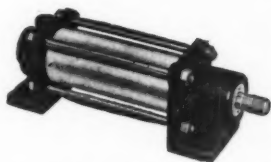


Illustration shows Nopak Model "A" 6" Cylinder which throws clutch in and out

NOPAK CYLINDERS

Actuate Meal-Extractor Clutches



NOPAK Model "A" Cylinder with Self-Regulating Cushion at both ends of stroke

At Victory Mills, Ltd., Toronto, Canada, each of 12 power-driven meal extractors is equipped with a Nopak Model "A" 6" Cylinder to engage and disengage the clutch to the bevel pinion gear which rides on the line shaft. Power is transmitted from the line shaft, thru the clutch, to the sweep-arms inside the extractors. A Nopak 4-Way control valve operates each of the 12 cylinders, eliminating manual effort, assuring greater dependability and smoother operation. This is but one of many power-transmission applications in which Nopak Valves and Cylinders are serving efficiently under rugged operating conditions.

GALLAND-HENNING MFG. CO.
2754 SOUTH 31st STREET
MILWAUKEE 7, WISCONSIN

Representatives
in Principal Cities

NOPAK
VALVES AND CYLINDERS
DESIGNED for AIR and HYDRAULIC SERVICE

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

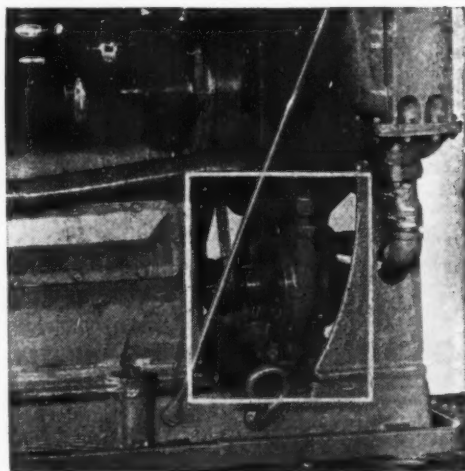
A-5644-1/2I



COOLANT PUMPS

Installation shows Fulflo Pump circulating the cooling water of the engine built by Universal Motor Co., Oshkosh, Wis. It's a pretty bit of cooling engineering . . . your plant can gain by using FULFLO, too.

Write on your letterhead
for FULFLO MECHANICAL
DATA BOOK



FULFLO RELIEF VALVES

For by-pass, oil-relief where pressures must be constant. CHATTERLESS. . NO MAINTENANCE REQUIRED. State working pressures required.

THE



Specialties Co., Inc.
BLANCHESTER, OHIO

SPEED UP

your stud setting

**Faster, more economically
in one continuous
operation**

MODERN SELF-OPENING STUD SETTER

This simple tool does your stud setting job in a single, quick, continuous operation. When the stud is driven to the desired depth, contact between the stop collar and the work releases the clutch, then lifting the tool off the stud automatically disengages the jaws. No reversing. No backing off the stud.

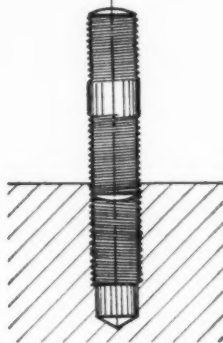
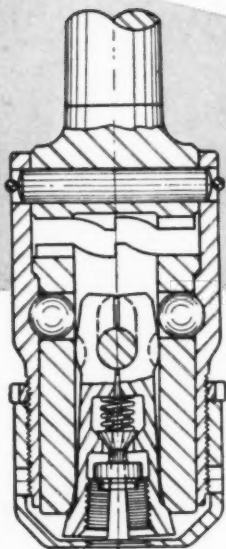
If you have studs to set in quantity, it provides a means to greater production volume at lower operating cost.

The action of the Modern Stud Setter is positive and entirely automatic. It can be operated in any position with either air or electrically operated portable tools. It is equally effective for use in drill presses where it is possible to drill and tap the holes and set the studs in successive operations.

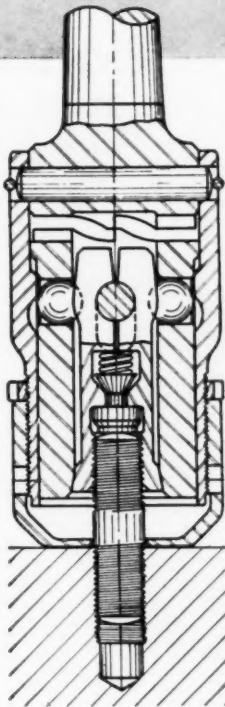
Made in two sizes: $\frac{1}{2}$ " and $\frac{3}{8}$ " capacity.

Many automobile, truck, tractor and diesel engine manufacturers and others having studs to set in quantity rely exclusively on Modern Stud Setters.

Let Modern Engineers help with your stud setting problems. Full information will be furnished promptly upon request.



Tool in position over the stud ready to start the drive.



Drive completed. Jaws open automatically releasing the tool.

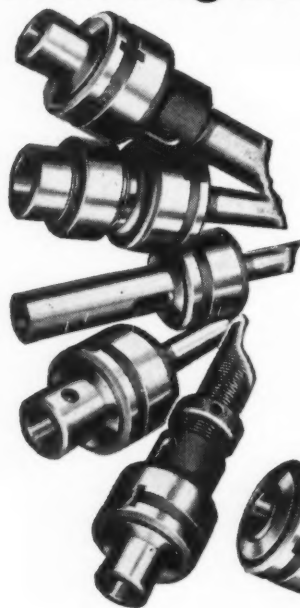
MODERN TOOL WORKS

DIVISION OF
CONSOLIDATED MACHINE TOOL CORPORATION
ROCHESTER 10, NEW YORK

MACHINING

**TRUE
AS AN
ARROW**

with **GLENCO**
Floating Tool Holders

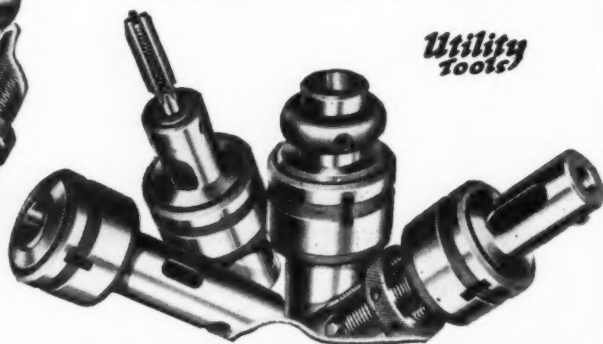


No more lopsided, out-of-true or bell-mouth holes, even on old and worn machines. Glenco Floating Holders provide accurate compensating movements under load for **POSITIVE CORRECTION OF MISALIGNMENT.**

26 TYPES

Send for Index J Data Sheets

Test any stock size 30 days without obligation



THE J. C. **GLENZER** CO. Inc.

1546 E. NINE MILE ROAD, DETROIT 20, MICH.

CHICAGO

Powerful

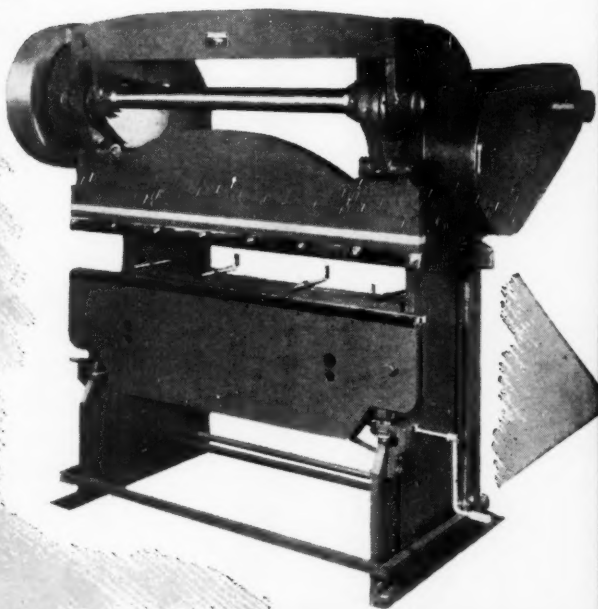
TYPE "300"

STEEL PRESS BRAKE

A Press Brake made to exacting standards and built to take hard and continuous use.

This press will do your work well and efficiently. Dependable service is guaranteed and proven by many years of operation. Variable speed drive for speed and safety.

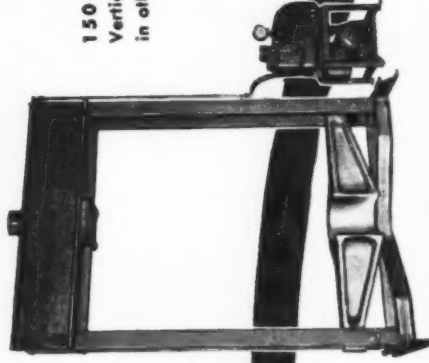
This is only one of the many fine presses made under the banner CHICAGO. There is a CHICAGO steel press brake to meet your requirements. Your die problems are ours—let us help you.



DREIS & KRUMP MANUFACTURING CO.
7440 LOOMIS BLVD. . . CHICAGO 36, ILLINOIS

**WHERE YOU NEED RUGGED,
VERSATILE Dressing Power...**

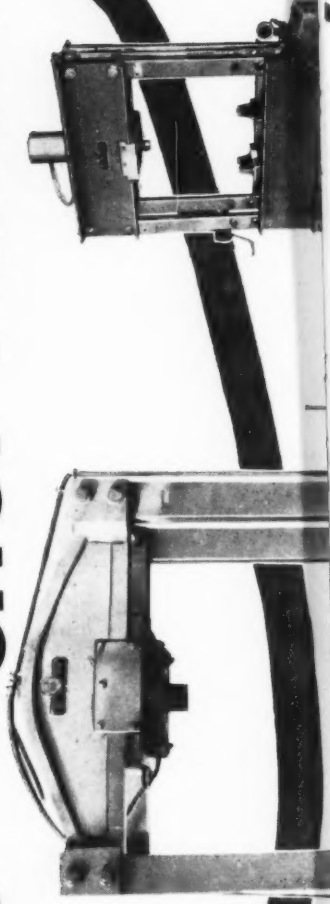
**150 TON Open Yoke
Vertical Press. Available
in other tonnages.**



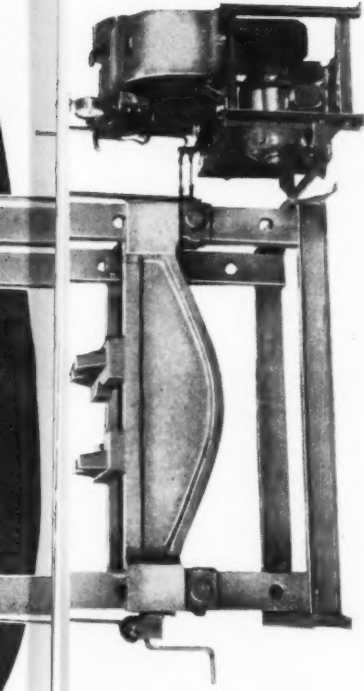
HEAVY DUTY

Rodgers

SHOP PRESSES



with 2-way travel cylinder, 14" ram travel and 4-way valve.



200 TON Rodgers Shop Press with new 2-speed or 4-speed hand pump.

FOR the big, tough jobs where you need dependable pressing power and fast operation you can meet your requirements with a Rodgers heavy duty shop press—100, 150, 200, 300 or 400 ton capacity. These sturdy, standard units are designed and built to take the rugged jobs with ease.

In addition to their construction features Rodgers Presses may be powered by your selection of 2-speed or 4-speed hand pumps or power-driven units if extra speed is required. Hand pumps can be converted to power by adding an electric gear head motor.

Standard shop presses are also available in 60 and 80 ton capacities for lighter work. Special presses are designed and made by Rodgers for specific requirements.



Rodgers Hydraulic, Inc.

7453 WALKER ST., ST. LOUIS PARK, MINNEAPOLIS, MINN.

HYDRAULIC POWER EQUIPMENT

SEND FOR NEW CATALOG

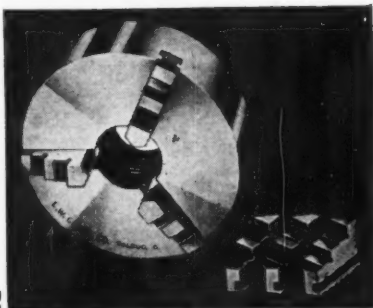
Rodgers Catalog 313 gives full details on the complete shop press line with illustrations, descriptions and specifications. Send for your copy today.



L-W

5" UNIVERSAL 3-JAW LATHE AND SCREW MACHINE CHUCK

- * **UNUSUALLY RUGGED**
- * **HIGHLY ACCURATE**
- * **FINE QUALITY**
- * **LONG LIFE**



A MOST OUTSTANDING VALUE

At the **unbelievably low price** of only
Fits any lathe having 1½"—8 thread spindle.
Using back adapter plate, it mounts on any
size or type. Fits L-W 6½" SD Dividing
Head. Weight 9 lbs.

\$25.30

3 TOUGH HARDENED STEEL PINIONS

Two sets of accurately cut, hardened and ground steel reversible threaded jaws. A tight grip always. Cast semi-steel body ground to fine finish. Tough hardened steel screws and anchor bearings.

6¼"	\$35.20	Shipping Weight 18 lbs.
7½"	\$44.25	Shipping Weight 25 lbs.
10½"	\$92.60	Shipping Weight 70 lbs.

L-W 4-JAW CONVENTIONAL TYPE HVY. DTY. INDEPENDENT LATHE CHUCKS

6"	\$ 18.30	Shipping Weight	11½ lbs.	5/8" jaws
8"	22.95	" "	20 lbs.	3/4" jaws
10"	50.20	" "	35 lbs.	1 1/4" jaws
12"	57.35	" "	75 lbs.	1 3/4" jaws
14"	66.65	" "	91 lbs.	1 7/8" jaws
16"	87.65	" "	140 lbs.	2 1/4" jaws
18"	115.55	" "	160 lbs.	2 3/4" jaws

So sure are we that you'll be more than happy with the way any L-W product does a good job for you that we offer an unconditional money-back guarantee of satisfaction.

Send for complete catalog giving prices and specifications on these quality, low-cost L-W Products

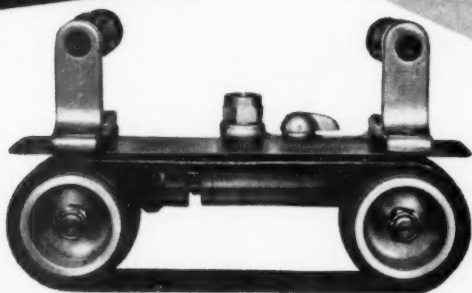


L-W CHUCK COMPANY

2350. ST. CLAIR ST.
TOLEDO 4. OHIO

SPOTLIGHTING

production economy



BELT SANDER—an entirely new concept of abrasive tool design and operation.

WITH THE NEW
BUCKEYE **STREAM POWER**
Air Tools

Spend less time and money for air tool service and maintenance and you'll cut production costs. You'll save with Buckeye Stream-Power Air Tools—built to stay on the job longer, designed for quick, simple maintenance. The basic simplicity of Buckeye Air

Tools, plus design improvements in throttle, governor, plates, cylinders, rotor and bearings will cut air tool down-time to a minimum—and that means production economy. It will pay you to inquire about the new Buckeye Stream-Power Air Tools today.



NEW CATALOG

The complete line of Buckeye Air Tools, including the revolutionary new Belt Sander, is described in the new Buckeye Catalog. Write for your copy today.

HORIZONTAL GRINDERS • VERTICAL SANDERS AND GRINDERS • SHEARS
NIBBLERS • DRILLS AND SCREWDRIVERS • ACE-CYCLE ELECTRIC TOOLS

Buckeye Tools
CORPORATION

DIVISION 14 • DAYTON 1, OHIO

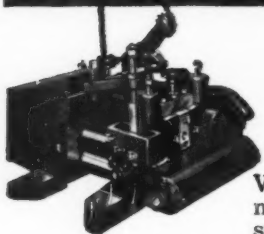
When Writing Advertisers Please Mention **MACHINE** and **TOOL BLUE BOOK**

**For Automatic Feeding to
Punch Presses • Press Brakes**



A press brake equipped with Wittek No. 6-L Automatic Roll Feed

***You Can't Beat
WITTEK***



Wittek Roll Feeds are made in standard models to meet every requirement in the automatic feeding of strip stock to punch presses or press brakes. The distinguishing feature is their simple and economical method of operation which does away with complicated parts thereby assuring *speed* and *accuracy* in the feeding of various kinds and thicknesses of material.

Wittek Adjustable Reel Stands are designed as companion units to Wittek Automatic Roll Feeds and are available in seven different models to handle *ALL* types of coiled strip stock and wire being fed to punch presses or similar production machinery.

Special units of Wittek Automatic Roll Feeds and Adjustable Reel Stands are engineered to meet unusual requirements.

Write for complete descriptive literature

WITTEK Manufacturing Co.

4321 W. 24th Place
Chicago 23, Ill.

Automatic
ROLL FEEDS AND
REEL STANDS

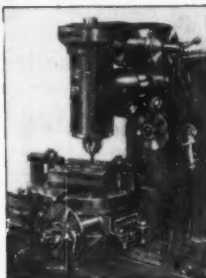


MARVIN *Presents*

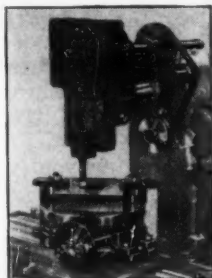
• The MARVIN VERTICAL MILL ATTACHMENT • MARVIN ROTARY TABLE • MARVIN SLOTTING ATTACHMENT



The new 6" MARVIN ROTARY TABLE for your ATLAS BENCH MILL or Shaper. Locks from the bottom to prevent tilting . . . 3 index plates, 6 sets of holes each . . . hand wheel, worm hardened and ground. All castings are iron. Extremely rigid. No. R-1102 \$93.00.



The new VERTICAL MILL ATTACHMENT for ATLAS BENCH MILLS. Can be attached to the spindle of your mill in 3 minutes. The head can be set at an angle or pulled out past the travel of the table for overhanging work. No. V-1200 \$65.00.



The new SLOTTING ATTACHMENT for ATLAS BENCH MILLS. This tool simplifies many awkward jobs. Makes squared holes, dies, splines, and internal key seats. Operates quietly and smoothly, a most efficient tool for you to own. No. S-1070 \$82.00.



Now . . . for the first time . . . you can increase the versatility of your ATLAS BENCH MILL 400%. MARVIN ATTACHMENTS can be attached to your mill in 3 minutes. Ideal tools for the HOBBYIST but a necessity for PRODUCTION PLANTS.

LOWER YOUR PRODUCTION COSTS to meet today's competition, LOWER YOUR SELLING PRICE to meet today's demand for lower prices. The MARVIN BENCH MILL ATTACHMENTS are the answer to your production and marketing problems. Write now for complete information. All prices quoted F.O.B. Canton, Ohio.

Copyrighted 1949 by H. B. Hazerodt

MARVIN

MACHINE PRODUCTS, INC.

SALES OFFICE • 414 FORD BLDG.
DETROIT 26, MICHIGAN

MARVIN MACHINE PRODUCTS, INC.
414 Ford Bldg. Dept. 101 MTBB • Detroit 26, Mich.

Please send me literature

Name _____

Company _____

Address _____

City _____

Zone _____ State _____

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

57

Smart Carbide Users

BRAZE & SAVE!

Do You?



Are you taking advantage of the savings in money, time and headaches by brazing your own carbide tools with **ADAMAS TUNGSTEN CARBIDE?**

Brazing your own tools with durable ADAMAS carbide tips is simple, requiring no special equipment or technical knowledge.

How you save money— ★ Shank steel and ADAMAS carbide tips are inexpensive. ★ Increased use of present tool room facilities. ★ Preformed ADAMAS tips require little grinding with costly diamond wheels. ★ Maintain economical low level of finished tool inventory.

How you save time— ★ Quick delivery on standard and special ADAMAS tips. ★ Eliminate costly down time waiting for tools. ★ Direct control of carbide tool production schedules.

Convinced of the advantages and economy for carbide tool users, ADAMAS is concentrating on the job of maintaining the *fastest delivery schedule of quality tungsten carbide at lowest competitive prices.*

Write for
valuable
free illustrated
booklet
"Brazing and Save"
to Dept. B

ADAMAS CARBIDE CORPORATION
1000 South 4th Street • Harrison, New Jersey

BAYFLEX....

...the Answer to
some "64 dollar"
WELDING
QUESTIONS

Thousands of satisfied users will support our claim that Bayflex discs are unequaled for fast, safe, clean and economical grinding and finishing of steel welds, stainless welds, bronze, copper, aluminum or iron alloy surfaces. It will pay you to investigate this new labor-saving, money-making abrasive product.

Write us today for a demonstration — no obligation on your part.

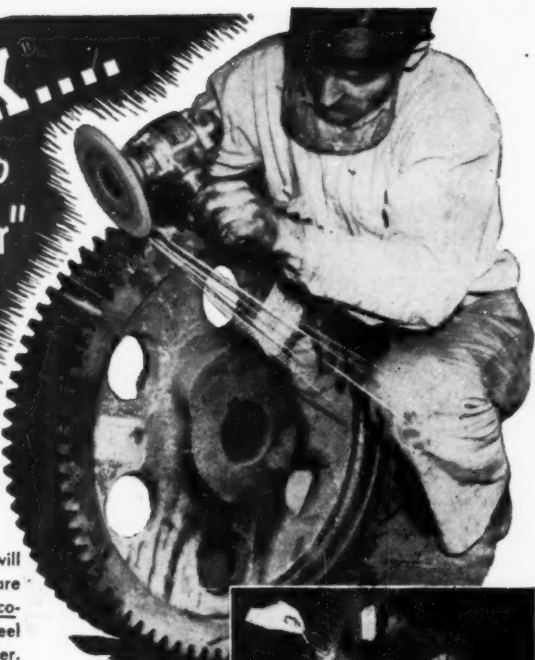
BAY STATE ABRASIVE PRODUCTS CO.

Westboro Massachusetts, U. S. A.

Branch Offices and Warehouses
Chicago — Cleveland — Detroit — Pittsburgh
Distributors — Principal Cities

**BAY
STATE**

MEMBER OF
THE GRINDING
WHEEL INSTITUTE



1. The excess metal-deposit on this job was removed by a 7"x 3/16"-24 grit disc.

2. A broken tooth prior to welding and smoothing.



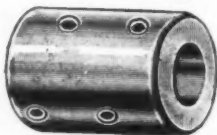
Bayflex discs are unexcelled for smoothing welds . . . they outperform the ordinary coated abrasive disc 40 to 1 or better.

Preparation of cracks before welding . . . a typical application. Discs will fit all standard right angle head grinders and sanders, air or electric.



Top Performance Consistently Duplicated

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

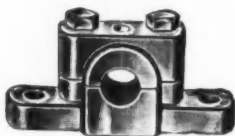


Yes!—they're all

Chicago DIE CASTING Stock Items

The castings displayed on this page are just a part of our Stock Line. You save time and money when you use Chicago Castings.

Make our factory your headquarters for your casting requirements.



For complete information write for CATALOG No. 49A



Chicago DIE CASTING MFG. COMPANY
2512 West Monroe Street, Chicago 12, Illinois



LOOK AT THIS PRESS

It's designed to provide industry with low-cost, high production units that are highly flexible in design and operation... relieving heavier presses of short runs and lighter work. Presses are practically fool-proof in operation. Frame is extremely rugged. Fingertip controls are conveniently located at hand level. Available for immediate delivery, in standard width (between uprights) of 24"-31"-36"-42" respectively. Available in special width up to 72" at small additional cost. Movable bed plates. Pumping unit has bypass relief valve which can be set at any pressure up to press capacity. Presses available for either vertical or horizontal operation. All Standard presses equipped with 2-speed built-in hand pumps for more sensitive and versatile operation.

READ THESE "SPECS":

CYLINDERS: Standard Models furnished with 6" bore, 7½" stroke—spring return type; also 5" bore, 7½" stroke—spring return type. Above presses are standard. Following can be furnished at additional cost: Double Acting, 6" bore, 7" stroke; 6" bore, 11" stroke; 5" bore, 7" stroke; 5" bore, 11" stroke. Special long stroke cylinders also available, up to 48" in length, for incorporation in suitable press frames of our make.

PUMPING UNITS: These units can be supplied in various volumes and pressures, in a total of 13 combinations.

Presses include V blocks, Gauge, Motor Controls, Pressure Regulator, etc., complete and ready to attach to electrical source.

CHECK THESE USES:

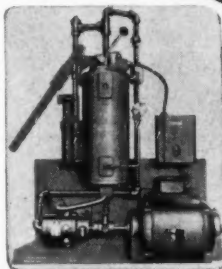
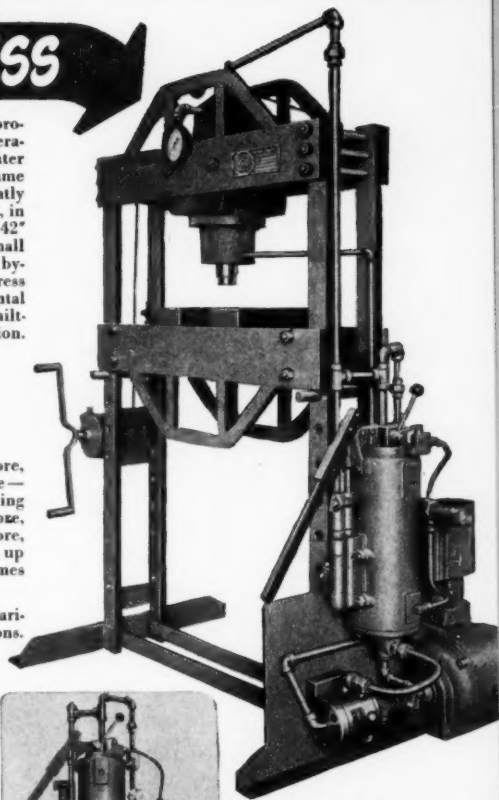
There are so many everyday production uses for these versatile KRW Hydraulic Presses that we have lost count. Here are a few of the more obvious... blanking, forming, bending, broaching, straightening, stamping, embossing, numbering, upsetting, laminating, pressing and hot or cold forging. KRW Engineers are daily developing other uses. If you have only a vague idea of how these presses might be used in your plant, let us have it in a rough form. We'll do the rest.

BEAT THESE PRICES:

Depending upon capacity of pumping equipment, prices of Standard model motor driven hydraulic presses are as follows, F. O. B. Factory: 25-ton press from \$727.00 to \$992.00. 50-ton press from \$806.00 to \$1058.00. 60-ton press from \$1070.50 to \$1135.00. 75-ton press from \$1198.00 to \$1258.00. All motors in the above units are 220/440 volt, 3 phase, 60 cycle. Any change in motor specifications is extra. *Subject to change without notice.

K·R·WILSON

215 MAIN ST. · BUFFALO 3, N. Y.



MODERNIZE AND MOTORIZE YOUR PRESENT KRW PRESS with one of these compact motor drive units. They come complete ready to connect to your press. Require very little extra floor space. Write for conversion unit prices, giving the capacity and serial number of your press.

MAIL THIS COUPON

It will bring you all the money-saving facts about these low cost, high production hydraulic presses. Now is the time to get ready for the highly competitive days ahead.

K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

Please send me complete information on KRW Motor Driven Presses as follows:

- ☐ 25-ton ☐ 50-ton ☐ 60-ton ☐ 75-ton presses
☐ motor drive conversion unit ☐ Press Cap.

Serial No. _____

Name _____

Address _____

City and Zone _____ State _____

CUT HEAVY and LIGHT STOCK Both **NIAGARA**

You don't have to adjust knife clearance on Niagara Power Squaring Shears every time you cut a different thickness of stock! Niagara capacity ratings are maximum capacity ratings, and they cut any thickness of stock up to their top rating **WITHOUT TINKERING WITH THE KNIFE ADJUSTMENT.**

And to prove it, look at the photograph at right...one man is cutting a 20 gage sheet and the other is cutting 5/8" plate **BOTH AT THE**

SAME TIME, AND WITH THE SAME KNIFE ADJUSTMENT, AND WITH THE SAME GOOD RESULTS.

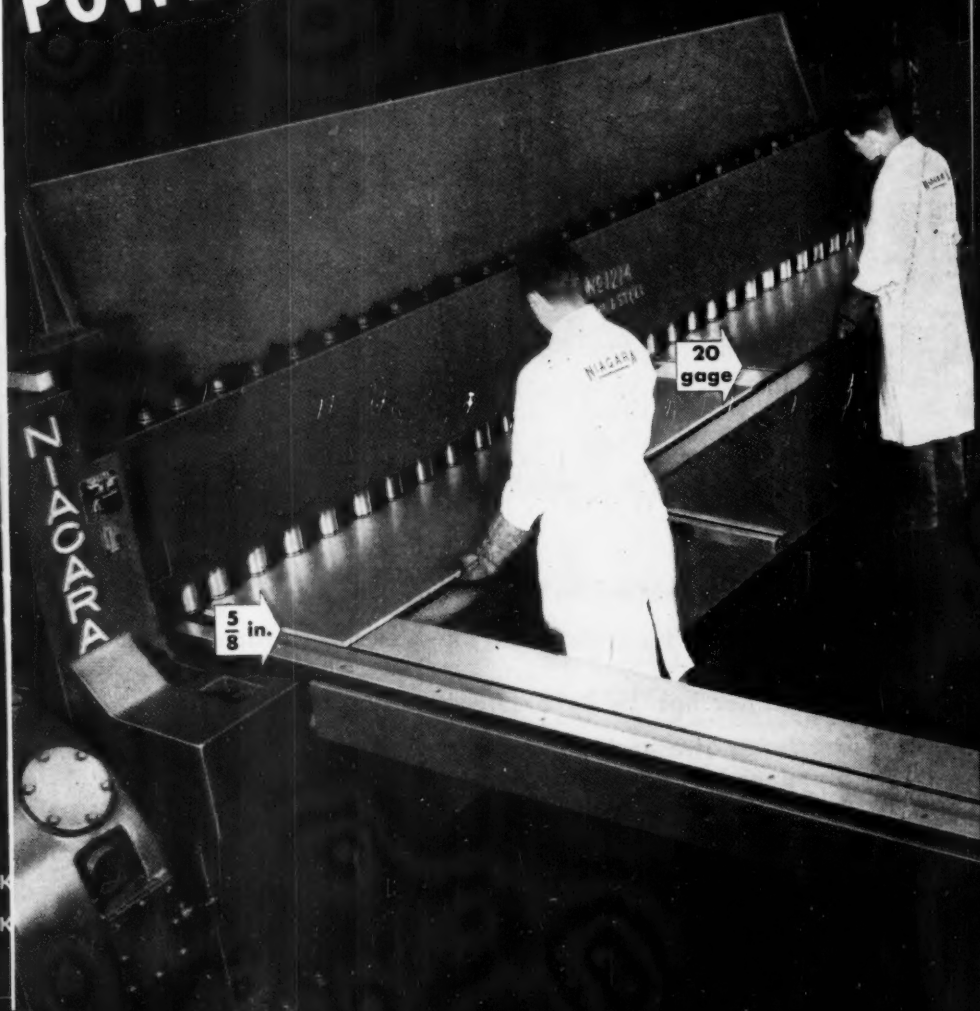
This is done daily in our own plant on our own work. We gladly demonstrate.

It speaks for Niagara design, Niagara rigidity, Niagara strength and the recognized ability of Niagara shears to deliver more working strokes per hour.

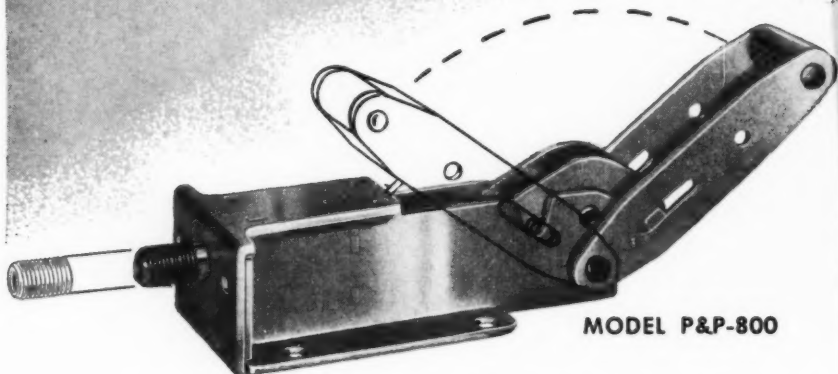
Write for bulletin.

NIAGARA MACHINE AND TOOL WORKS, BUFFALO 11, NEW YORK
DISTRICT OFFICES: DETROIT, CLEVELAND, NEW YORK

at the Same Time on
POWER SQUARING SHEARS



USE THIS *New Type* CLAMP
for places where conventional
clamps will not operate



MODEL P&P-800

One of the outstanding features of THIS PUSH AND PULL CLAMP (Model P&P-800) is its ability to exert a pressure up to 800 pounds during the entire 1 1/4" travel of plunger in either direction. It automatically locks itself at completion of handle swing.

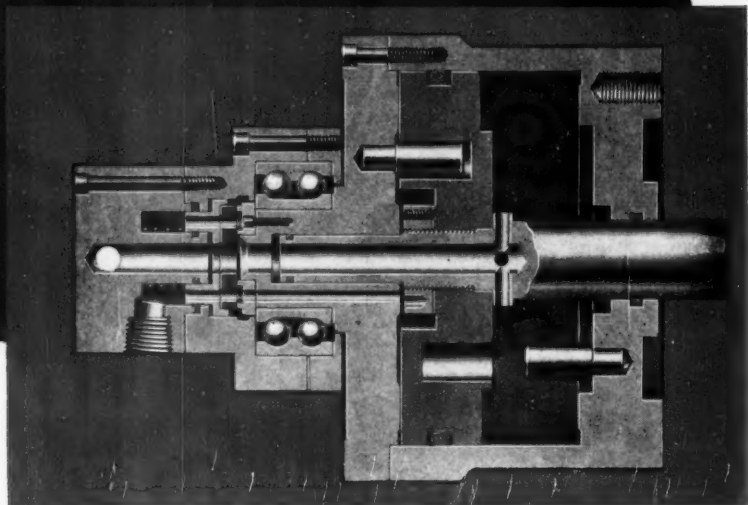
Can be mounted on bottom or front at any angle. Model P&P-800 has dual straight flanges for straddle mounting.

Plunger has 3/8-24 external and 1/4-28 internal threads for choice of adaptation.

**KNU-VISE
PRODUCTS**

LAPEER MANUFACTURING CO.
3056 DAVISON ROAD • LAPEER, MICHIGAN

AN IMPORTANT ADVANCE
TO MEET TODAY'S DEMAND
FOR **SPEED** IN MACHINING



THE
CUSHMAN
Aluminum **HIGH SPEED**
AIR CYLINDERS
FOR POWER CHUCK OPERATION

Especially developed for advanced machine tool applications . . . guaranteed to operate without pressure loss under heaviest recommended loads and at speeds to 5000 r.p.m.

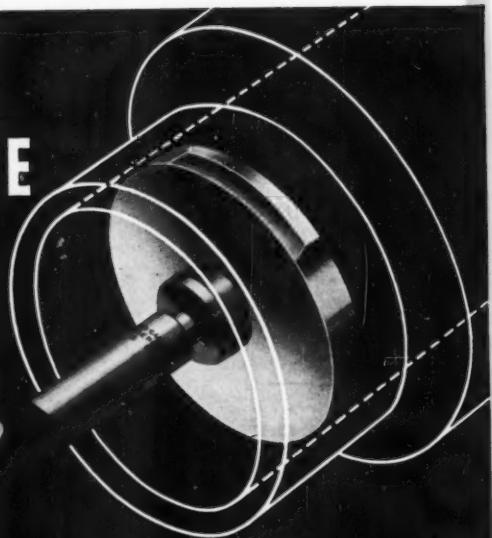
Aluminum alloy forged cylinder bodies finished with lapped bores . . . cylinders statically balanced after assembly, no vibration, low flywheel effect.

Available for use with Cushman or other chucks in 3 1/4" to 12" sizes. Send for Bulletin.

THE CUSHMAN CHUCK COMPANY, HARTFORD 2, CONN.

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

The PLUG GAGE of TODAY



DuBo*

Advantages all spell ECONOMY

Consider that use of DuBo Plug Gages results in time saved because of their ease of entry . . . add cost savings through the elimination of parts needlessly rejected and the reduction of parts

incorrectly passed . . . add speedier, surer handling of work . . . add long, consistent service . . . and you'll agree that for your fixed limit gaging DuBo Plugs lead the way to lower costs.

SELF-PILOTING

Utter ease of entering is a real and definite time-saver. Relieves nervous strain of fussy positioning.

LIGHT WEIGHT

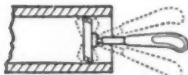
70% to 80% lighter weight than cylindrical plugs means fewer fatigue-induced errors.

LONG WEAR-LIFE

By minimizing friction, outlast ordinary cylindrical plugs many times and maintain accuracy throughout exceptionally long life.

NOW — CHROMIUM PLATING is available on the gaging surface, adding a tremendous plus to an already long service life. Extra cost is small for

the increase in wearability. Write for details of Chromium Plated DuBo Gages and chromium plating salvage service.



Operates by tilting handle, without force. Whether handle drops freely or not is the definite yes-or-no indication.



This new illustrated folder will tell you more about the cost saving features of DuBo Gages. Yours for the asking.

*U. S. and Foreign Patents Granted

STANDARD GAGE CO., INC. Poughkeepsie, N.Y.

Featured in this issue

HOW MUCH DOES IT COST TO USE RADIO FREQUENCY HEATING? by A. P. Bock. ~~The author presents~~ some pertinent information on methods of computing the cost of RF heating. Charts analyze costs from several angles. An excellent guide to the ~~cost-conscious~~ manufacturer, who contemplates the use of RF heating. Page.....71

LETTER FROM ENGLAND, by Robert Hutcheson. Page89

CAM-OPERATED, DOUBLE-ACTION ROOFING PRESS INCREASES PRODUCTION, LOWERS MAINTENANCE, by Gerald Eldridge Stedman. Here is ~~a discussion of~~ an interesting press which has increased production approximately 150% with a considerable reduction in maintenance time. Southern States Roofing, designers of the machine, design many of their own machines and tools. Several photographs, and a description of other processes at this progressive manufacturing plant are high-lighted by the BLUE BOOK'S roving editor. Page96

DIE INNOVATIONS FOR BETTER PRODUCTION, by Frank Charity. Some outstanding developments have been perfected, in West Coast shops, especially in die design and the pressworking of metals. Some of the innovations are described and illustrated by the author. Page105

WHAT DOES THE BUYER WANT, by W. J. Peets. Another in the series of sales lectures which have aroused a flood of interest. Mr. Peets explains how a salesman becomes a part of a manufacturer's engineering staff when changes in the product, or a new product, are considered. A salesman must ~~thus~~ know production, engineering, and the extent to which his product can contribute to the successful manufacture of the product. Page118

THE SALES ENGINEER'S DAILY ACTIVITY, by R. A. Vidinghoff. In this NMTBA sales lecture the author stresses the importance of paper work, and the office routine. Office work can eat away many profitable hours from a salesman's day unless he organizes his routine according to efficient principles. Page135

THE TECHNIQUE OF A SALES ENGINEERING INTERVIEW, by E. B. MacDonald. Let the customer talk himself into the order; let him convince himself (with your skillful help, of course) that with your machine he can treble production, reduce costs, win the boss' daughter, and be a national hero. It is important that not the machine, but benefits be sold. It is only in the benefits that the customer is interested. The machine is secondary. Some excellent selling hints are presented in this article, another in the series of sales Refresher Course Lectures. Page153

NEWS OF THE INDUSTRY. Page175

Bickford Celebrates Anniversary. Page 175

Vermont Tool Builders Hold Show. Page 176

Machine Tool Shipments. Page178

APPOINTMENTS AND PROMOTIONS. Page182

AVAILABLE LITERATURE. Page191

SHOP HINTS. Page197

Unusual Use of Forming Machine Solves Heater Production Problem. Page ...197

WHAT'S NEW IN METALWORKING. Page201

MECHANICS THROUGH THE AGES. Page250

PRODUCTS INDEX. Page252

INDEX TO ADVERTISERS. Page258

1874



215 square feet



1 h. p. CONE TYPE
UPRIGHT DRILL

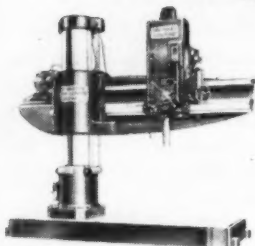
In our Seventy-Fifth year

of manufacturing metal drilling machinery, we extend our thanks and appreciation to industry throughout the world, for the confidence placed in us. This confidence has contributed to our continuous growth, and has made it possible for us to become the largest company in the world devoted exclusively to the manufacture of radial, upright and jig boring machinery.

1949



270,000 square feet



50 h. p. MASTER SUPER-SERVICE
RADIAL DRILLING MACHINE



THE CINCINNATI BICKFORD TOOL CO. Cincinnati 9, Ohio U.S.A.

As the **editor** *SEES IT*

LET'S WAIT AND SEE

A number of manufacturers have revived an old indoor sport, called "Waiting and Seeing What Business Will Do". At the first sign of a slackening of business, the manufacturer cuts back all along the line: workers are laid off, the sales and advertising budget is slashed, no purchases are undertaken, such budgets as the engineering department might have played with disappear surreptitiously; further, all planning for the future ceases, production stagnates, and minds atrophy. All this time they wait, and wait, look at the production index, and wait for business to do something.

Take the young manufacturer here in Chicago who launched a profitable business in 1940. For nine years fate smiled prettily, until recently, when fate turned her head and his orders disappeared. When last heard from he was sitting and waiting and looking at the production index.

His immediate competitor's orders began to shrivel up, but instead of waiting (he'd never heard of a production index) he worked his engineers overtime to rush several new products to completion. He then made great noises in announcing the birth of his brain children, and for a little guy he sure thumped his drum up and down the trade routes. We haven't seen him in several months, he's always too busy, or not in, or tied up.

Let's look at this thing called production index.

The index is down approximately 18% over

a corresponding period of a year ago. Theoretically this means that every manufacturer has suffered a loss of business of 18%, no more and no less. But that's not true. Some have lost 24%, others only 12%. A loss of 18% in the production index means simply this: for every 100 persons who bought a year ago, only 82 are buying today. But it in no manner implies that every manufacturer has to lose 18% of the remaining business. The amount of business which the manufacturer loses depends on himself alone and only on himself, not on an index.

A machine tool builder told me recently that his company accounted for 21% of all lathes sold in July; his strongest competitor accounted for 23%, while the remaining manufacturers, approximately 16 of them, split the remaining 56% between them, or 3½% for each builder.

Observations have convinced us that the manufacturer who hustles, plans, thinks, develops and who is in the fray with both arms swinging gets the brass ring. He does not spend dear time bemoaning business, chiding the government, complaining about competition, waiting for the turn of the seasons; for him there is not time enough in each working day to do all that and get orders too. No, our progressive manufacturer does not wait. He makes capital of every advantage. The progressive manufacturer receives one of his greatest advantages from his waiting competitors who believe that "They also serve who only stand and wait".

William F. Schleicher



New Electric Eye Machines Speed Ryerson Cutting Service

The multiple-torch gas cutting machine shown above is one of eleven recently installed in Ryerson plants from coast to coast. Equipped with an electronic eye tracing device, these remarkable new machines cut the most intricate shapes swiftly, accurately. The eye follows a simple sketch or blueprint within plus or minus fifteen-thousandths of an inch!

Many manufacturers are saving time and effecting substantial economies through the use of Ryerson flame-cutting. With electric eye machines rounding out a complete flame-cutting service, your Ryerson plant

produces an endless variety of shapes from mild steel, high carbon, alloy or stainless steel. Hundreds of pieces can be cut to the same pattern with almost die-cut uniformity, from steel plate up to 15-in. thick.

The new Ryerson cutting machines illustrate how we are continually expanding our facilities to give you faster, more efficient steel service. We urge you to call us when you need steel in a hurry.

PRINCIPAL PRODUCTS—Carbon, Alloy & Stainless Steel—Bars, Structurals, Plates, Sheets, Tubing, Machinery & Tools, etc.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON PHILADELPHIA • DETROIT CINCINNATI • CLEVELAND • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS LOS ANGELES • SAN FRANCISCO



HOW MUCH DOES IT COST

to Use Radio Frequency Heating?

by A. P. Bock.

Section Engineer, Industrial Electronics Division, Westinghouse Electric Corp.

Will the use of radio frequency heating process justify itself in your plant? Charts in this article may give partial answers. They discuss: basic operating costs of RF heating, operating costs vs output ratings, heating costs per work piece, costs per pound for heating magnetic steel, and cost variations per ton of product for various production rates in tons per hour.

AS IS the case with any new process, radio frequency heating must pay dividends to its owner in one way or another, either in the form of lower processing costs or in superior quality of product, or both. For this reason, in extending its use, its economic feasibility for each application must be determined.

In the interest of making it possible to conveniently predict the cost of the radio frequency heating portion of a process, a number of curves, Figures 1 - 6 have been prepared. The costs are shown in various forms to cover several types of radio frequency heating applications.

Radio frequency heating divides into two methods of heating; induction and dielectric. Induction heating methods selectively heat metals or other electrically conductive materials for processes such as surface hardening of steel, soldering, brazing, flowing of tin on tin plate, tempering and annealing of steel, stress relieving, shrink fitting of metals, activation of carbon and many others. A hardening application is shown in Figure 7.

Dielectric heating methods generate heat within materials that are so-called non-conductors or poor

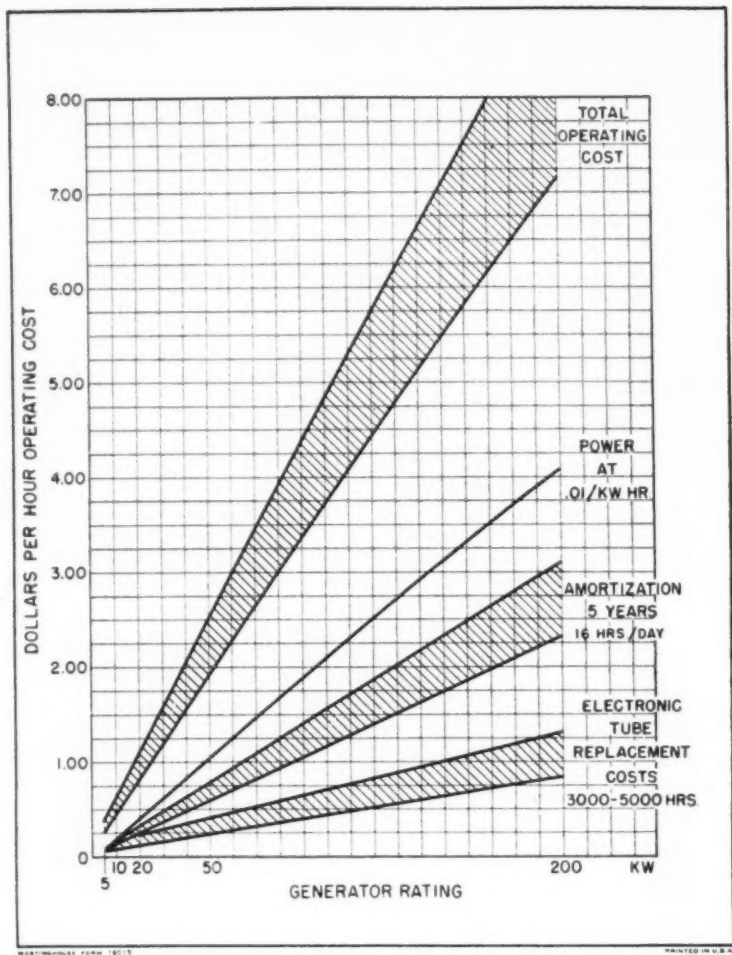


Fig. 1. Basic operating costs of oscillators for induction heating.

conductors of electric current. Such processes as preheating of plastics before molding, curing and drying of rubber, thawing of foods and rapid setting of glues as shown in Figure 8 are present applications.

Three basic steps are involved in the successful application of radio frequen-

cy heating: 1) an investigation of the economics before the technical development work is started 2) the technical solution, if the economic investigation indicates that radio frequency heating equipment is justified and 3) a final economic analysis, if the technical solution is found to modify the original

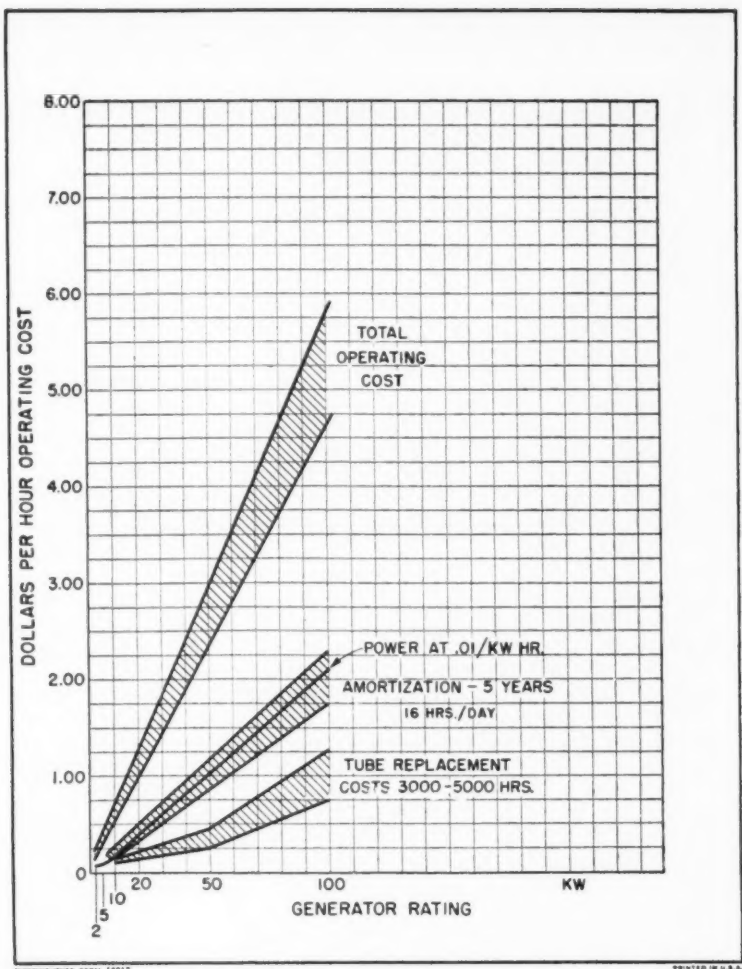


Fig. 2. Basic operating costs of oscillators for dielectric heating.

analysis that was made on a purely thermal basis.

Assuming that the technical solution has been or can be made, the investigation of the economics before the technical development work is as follows. First determine the thermal requirements of the job in terms of kilowatts

of radio frequency power for the production rate being considered. This can be done readily by applying the following relations:

$$KW = \frac{\text{lbs/hr} \times \text{Spec. heat} \times \text{Degrees Rise}}{3413} \quad (1)$$

If any water will be evaporated dur-

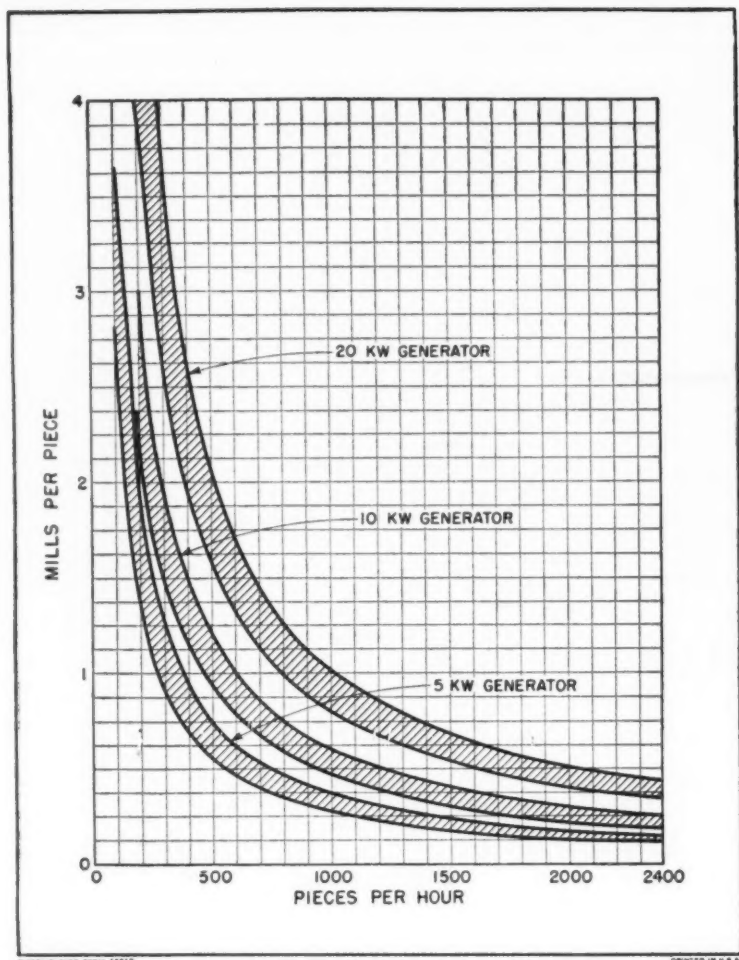


Fig. 3. Cost in mills per piece versus production rate.

ing the heating cycle, estimate the amount and determine the KW required to evaporate this amount of water.

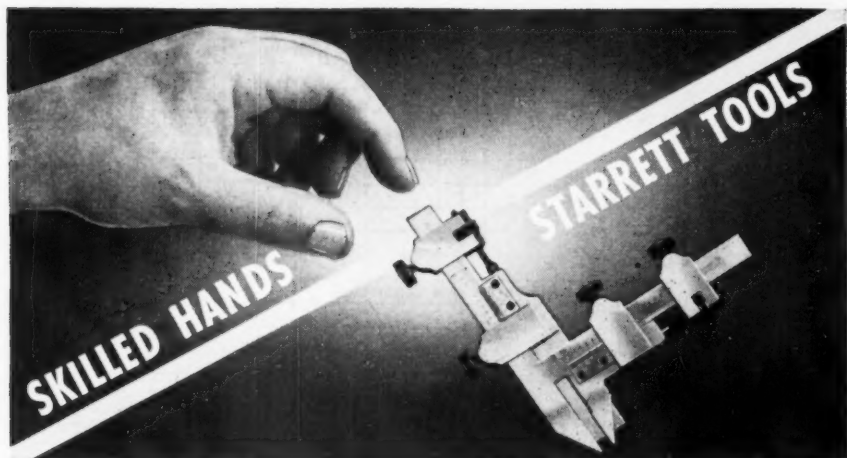
$$\text{KW} = \frac{\text{lbs/hr of water evaporated} \times 970}{3413} \quad (2)$$

The sum of equations (1) and (2) above,

plus 10% is a fair indication of the generator rating required at this stage of the investigation.

Obviously, the generator rating selected must be equal to or greater than the thermal requirements. Standard ratings available are indicated by the numerals of the horizontal scales of Fig-

AN UNBEATABLE COMBINATION...



STARRETT Tools in the hands of skilled craftsmen make a combination that insures the highest order of accuracy and fine workmanship. Since 1880, STARRETT has pioneered in the development of precision measuring tools . . . now makes more than 3000 items that contribute to better,

faster, lower cost precision mass production. As the "World's Greatest Toolmakers", The L. S. Starrett Company continues to lead in the development of new and finer tools and to raise the standard of precision wherever men work with skill and accuracy.

NEW TOOLS CATALOG

Describes and illustrates dozens of new and improved Starrett Tools. Send for your free copy. Ask for New Tools Booklet "B"



Starrett

TRADE MARK
REG. U. S. PAT. OFF.

Standard of Precision
MECHANICS' HAND MEASURING TOOLS AND
PRECISION INSTRUMENTS • DIAL INDICATORS
STEEL TAPES • HACKSAWS AND BAND SAWS
PRECISION GROUND FLAT STOCK

Buy Through Your Distributor

Vernier Caliper
No. 122

"Satin Chrome"
Micrometer

Tubular Micrometer
No. 724

THE L. S. STARRETT CO. • World's Greatest Toolmakers • ATHOL, MASSACHUSETTS, U. S. A.

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

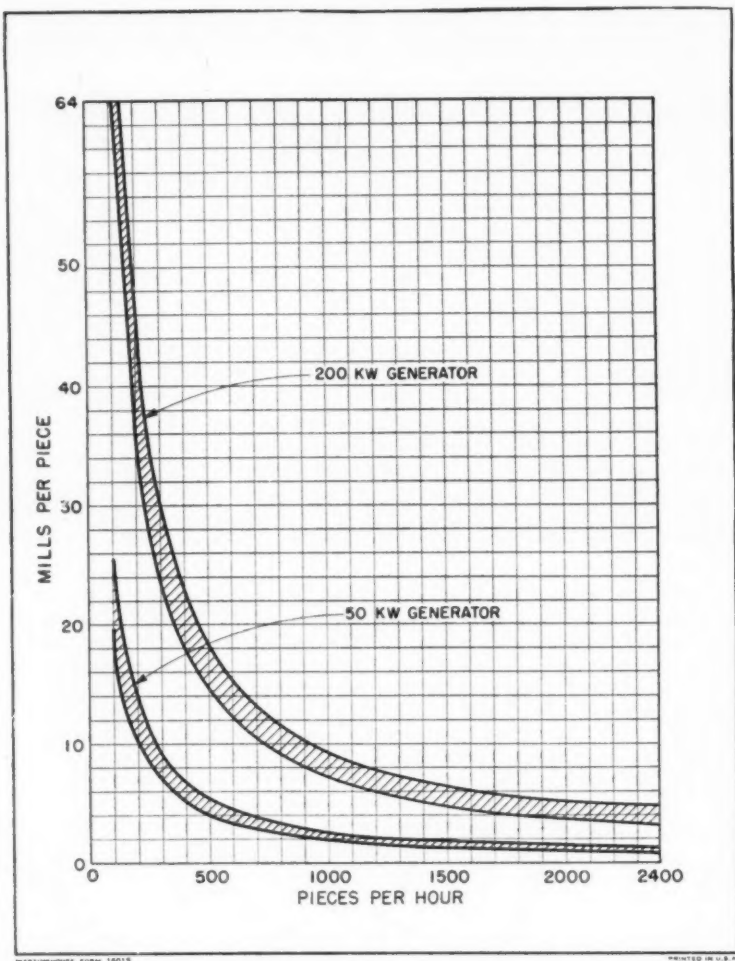


Fig. 4. Cost in mills per piece versus production rate.

ures 1 and 2. Should the thermal power requirements exceed an available rating of a generator by a small amount, one can consider adjusting the production rate downward a proportionately small amount to maintain a maximum economy. In some cases, when the thermal power requirements are out of line

with the available generator ratings, two or more generators with ratings that are a multiple of the power requirements can be considered. It is good practice to allow about 10% additional generator rating to take care of thermal radiation losses. This is an average figure, but should suffice for this phase

GROBET CHATTERLESS COUNTERSINKS

Six staggered cutting edges give a shearing cut that eliminates all chatter. Made of high speed steel ground after hardening.

12 sizes: $\frac{1}{4}$, $\frac{3}{16}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$,
 $\frac{7}{8}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$,
and 2 inch.

Standard 30°, 41°, 45° with center line. Also made in any other angles to order.



SEND FOR
CATALOG
SHEET
No. CC1



Grobet
SINCE 1812

SET OF ELEVEN
COUNTERSINKS
IN STRONG
WOODEN CASE
 $\frac{1}{4}$ " to $1\frac{1}{2}$ "

GROBET FILE CO. of AMERICA Inc.

421 Canal Street New York 13, N.Y.

PLANTS: NEW YORK • CHICAGO

SOLD THROUGH LEADING SUPPLY HOUSES.

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

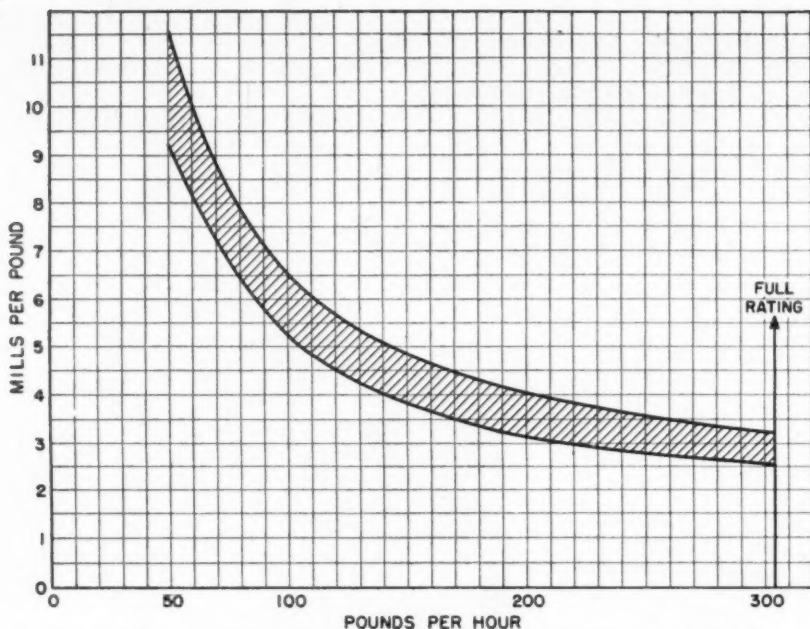


Fig. 5 Cost per pound versus pounds per hour, heating steel from 50° F. to 1400° F. with 20 KW generator.

• • •

of the investigation.

There are other factors which may require a higher rating of generator than the thermal requirements would indicate, but they need not be considered yet.

The second step is to approximate the heating costs from the appropriate curve, Figure 1 or 2. Then add any labor costs (unskilled operators can usually be employed).

Finally, add amortization of work handling machinery when such is being contemplated. When simple fixtures are required, the cost of this item may be neglected in a preliminary analysis. For semi-automatic machinery, a figure of 25% of the hourly cost of amortization of the generator selected is suggested. For full automatic machinery for

handling the work, a figure of 75% of the hourly cost of amortization of the generator selected is suggested. These values are, of course, subject to wide variation on specific jobs, but they can be used as "bench marks" in average cases.

The figure so obtained should tell one whether or not the radio frequency heating process appears to justify itself as compared to existing production methods or other possible systems. When FR Heating appears to be justified, these calculations are a guide to seeking the technical solution and reducing it to practice.

If the economic investigation indicates that radio frequency heating equipment is justified, the second basic step in its successful application is the technical

solution. This consists of detailed calculations by qualified engineers and laboratory tests. Usually the suppliers of the radio frequency equipments maintain an engineering service for this purpose and are glad to contribute to a technical solution of a specific problem.

Laboratory determinations by actual tests on samples are necessary when the nature of the process is such that the results cannot be obtained by calculation; or when it is necessary to check product quality of a new material.

Final economic analysis, the third basic step for successful application, is undertaken if the technical solution is found to modify the original analysis that was made on a purely thermal basis.

If a prospective application passes the above three stages of investigation, it is obviously a good sound business investment. It may even be poor business to continue to do without radio frequency equipment. If the prospective appli-

cation fails to pass step 1, it should be discarded with the consequent elimination of considerable waste of time, effort and expense to all parties concerned.

If the prospective application falls into a borderline case, it is advisable to have a recheck made periodically, since applications of radio frequency heating are in an intensive development stage, and new techniques are being discovered and developed continuously.

DISCUSSION OF CURVES

Figure 1 shows the basic operating costs of radio frequency induction heating equipment, versus output ratings. The ratings available at the present are 2-KW, 5-KW, 10-KW, 50-KW and 200-KW generators. The total basic operating costs are broken down into power costs at \$.01/kwhr, amortization costs and electric tube replacement costs. Since labor costs incidental to particular processes would vary considerably with the nature of the process being considered and the geographic location of the



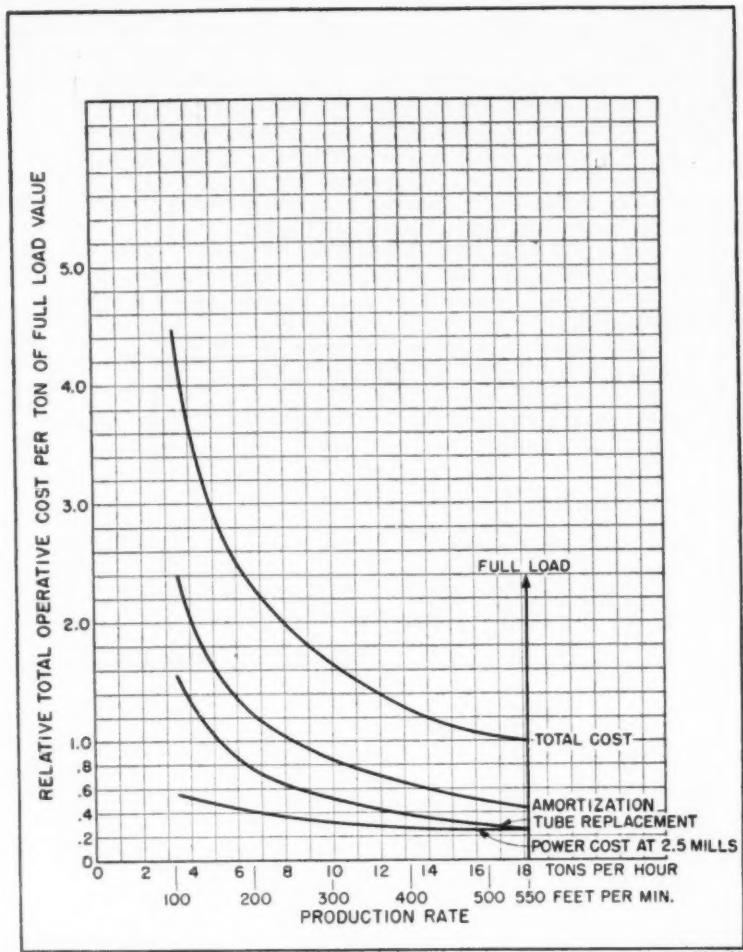


Fig. 6. Relative cost of brightening tin plated steel strip versus production rate with 600 KW equipment.

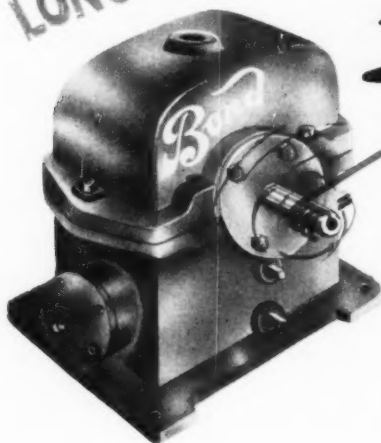
plant, they are excluded from all curves. They should be estimated and added, however. Generally, the labor costs will be found to be quite low, because most radio frequency heating applications fit into production line operations. Also it has been found that in most applications

unskilled labor is adequate for processing by the radio frequency heating method.

Figure 2 shows the basic operating costs of dielectric heating equipment, versus output ratings. The ratings readily available for this class of equipment

Bond SPEED REDUCERS

POWERFUL!
LONG LASTING ECONOMY



A Speed Reducer for
every Job. Ratios
Horsepowers from
from 5 to 3264,
1/30th to 6.

CHARLES

Bond

COMPANY

617 Arch St., Philadelphia 6, Pa.

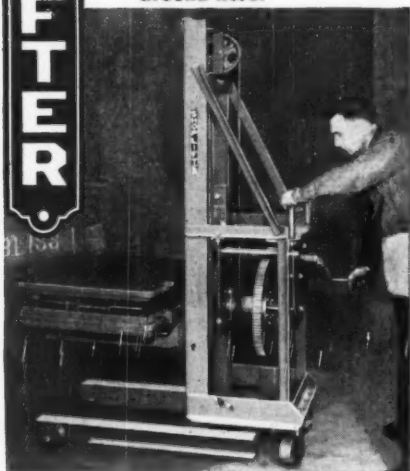
When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

81

SHOPLIFTER



... let an Economy SHOP-LIFTER do the heavy work around here.



Every shop needs a SHOPLIFTER. Saves men, saves materials. Besides handling heavy dies, the SHOP-LIFTER can stack drums and boxes, unload street trucks, pick up skids and be used as an adjustable height table.

All steel, arc welded frame. Easily operated hoist unit with automatic brake, safely holds load at any height.

500 pound capacity

Type D, hand operated.....\$157.50

Type DE, electric 1/3 HP unit.....\$315.00

1000 pound capacity

Type DX, hand operated.....\$320.00

2000 pound capacity

Type DX, hand operated.....\$370.00

Floor lock to hold machine steady:

\$10.00 extra for 500 pound sizes;

\$15.00 extra for type DX models.

ECONOMY ENGINEERING COMPANY

4505 W. LAKE STREET • CHICAGO 24, ILL.

are 2-KW, 5-KW, 10-KW, 20-KW, 50-KW and 100-KW. The frequencies used range from 5-mc through 40-mc. Usually one generator is built for one operating frequency because the absolute value of frequency used is seldom, if ever, found to be critical as far as heating is concerned.

When the duty cycle of a generator is 75% or more, Figure 3 and 4 show the approximate heating costs per work piece of a heating operation, versus production rate in pieces per hour. After the size of the generator, the heating time per work piece, and the loading and unloading time has been determined, the radio frequency heating cost per piece can be approximated conveniently from these curves. The labor chargeable to the heating operation should be estimated and added to the amount indicated on the curves. These curves also show at what range of production rates the cost-rate change is great and at what production rate it is small. For examples, if the production rate falls in the flat region of the cost curve, the unit cost is relatively stable for variations of production rates, but if the production rate falls in the steep-slope region of the curves such is not the case.

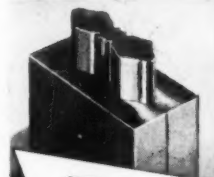
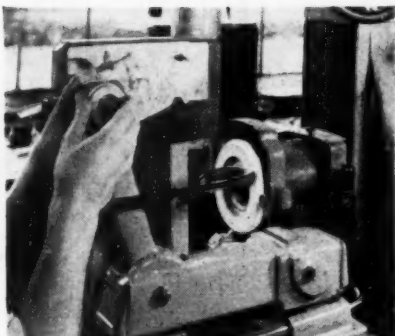
Figure 5 shows the radio frequency heating costs per pound for heating magnetic steel from 50°F to 1400°F continuously when using a 20-KW radio frequency generator.

Figure 6 shows the radio frequency heating cost variation per ton of product for various production rates in tons per hour for the induction heating process with 600-KW radio frequency equipment.

OPERATIONAL FACTOR

In most all manufacturing processes it has been found by actual experience that operation cannot be maintained a full 100% of the scheduled working hours. Flow of materials may be interrupted or in the case of multi-purpose

FORM-GRINDING TO NEW STANDARDS OF ACCURACY



BY PRECISION-DRESSING WITH THE NEW

Diaform WHEEL FORMING ATTACHMENT

PRATT & WHITNEY

has it... the new precision DIAFORM: a portable attachment that can be used on any horizontal spindle surface grinder to form-dress grinding wheels to tenths of a thousandth accuracy in a matter of minutes.

Operating on the pantograph principle, DIAFORM accurately traces any form from an inexpensive template at a reduction ratio of 10:1.

The dressing diamond is traversed over any grinding wheel up to 1" wide x 10" diameter by very light tracer pressure to form-dress the desired contour.

DIAFORM is built to exacting Pratt & Whitney standards of precision — to produce better dies . . . better punches . . . better flat forming tools in hours instead of days.

Pratt & Whitney

Division Niles-Bement-Pond Company
WEST HARTFORD 1, CONNECTICUT

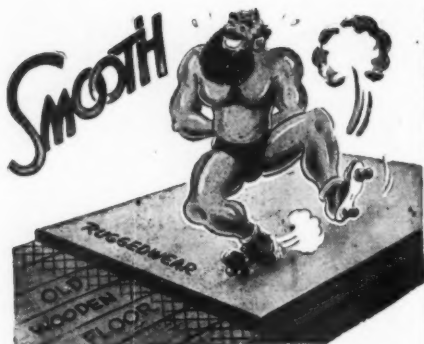


This new Bulletin tells the whole DIAFORM story, illustrating the time-saving procedure to produce an accurate split die and punch, from drawing to finish-grinding. Drop us a card for your copy.

diaform
for low cost, precision
form-dressing of grinding wheels



When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK



TOUGH FLOOR RESURFACER

**Makes Solid Patches
or Complete Overlay**

Use tough RUGGEDWEAR resurfacer over wood or concrete floors. Here is a material which will stand up under the most punishing traffic conditions. Simple to install—there is no chopping or chipping required. You merely sweep out the spot to be repaired—mix the material—then trowel it on. Holds solid and tight right up to irregular edge of old concrete. RUGGEDWEAR provides a firmer, tougher, smoother, more rugged wearing surface. Used indoors or out. Dries fast.



Mail Coupon
for
**FREE
TRIAL
OFFER**



FLEXROCK Co.,

3634 Filbert St., Philadelphia 4, Pa.

Offices in Principal Cities

Please send me complete RUGGEDWEAR information . . . details of TRIAL ORDER PLAN—no obligation.

Name

Company

Address

uses, set-up operations create some idle time. Therefore, it becomes necessary to take into account such operational factors as any particular process or program of processes may demand.

Cost per piece can be approximated from the curves in Figures 3 and 4 by multiplying the full load production rate, maximum capability of a radio frequency generator, by the estimated operational factor and reading the cost per unit from the curve corresponding to the reduced average production rate.

The cost per hour with operational factor reflected therein can be approximated by first determining the operational cost for stand-by operation. For this condition, the power cost will be approximately 25% of the full-load power cost. Then by adding the proportional costs per hour, the actual costs per hour reflecting the operational factor is obtained.

For example, Figure 1 shows a total cost of approximately \$2.00/hr and a power cost of \$1.00/hr for a 50-KW RF generator.

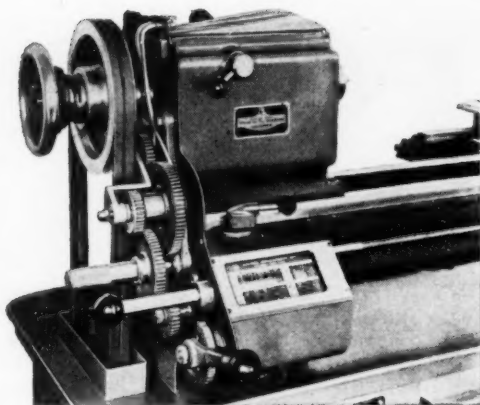
Then for 80% operational factor, assuming the RF generator is in stand-by condition while not operating, the cost per hour would be $.8 (2.00) + 2 (1.25) = \$1.85$ per hour. (Amortization and tube replacement costs continue during "stand-by".)

It is hoped this discussion and accompanying data will be an aid first in determining whether or not the application of radio frequency heating equipment to an operation will justify itself economically, and secondly in showing how much cost or cost saving is reflected into the product by application of R. F. THE END.

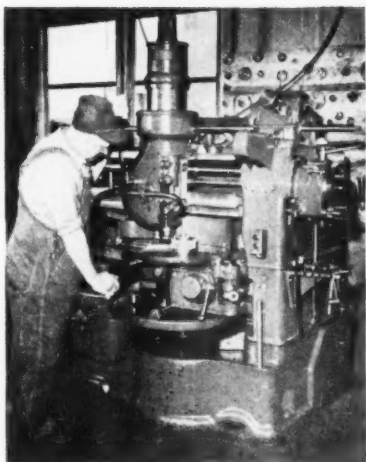
Internal Cutting Tools made of high speed steel come in three distinct types: for general boring, for bottoming and facing, for internal threading. All styles have combined helical and spiral relief. 4 pages. Specifications, photos. **Bokum Tool Co., 14775 Wildemere, Detroit, 21, Mich.**

FELLOWS QUALITY GEARS

as a Selling Point



well exemplified in *Clausing*
PRECISION LATHES



Cutting gears for the Clausing
Precision Lathe on the
Fellows 6A-Type Gear Shaper

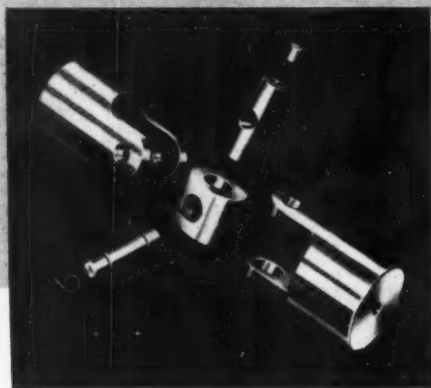
PHOTOS COURTESY: CLAUSING MAN-
UFACTURING CO., OTTUMWA, IOWA

Builders of machine tools have long recognized the advantages gained through precision-cut high-quality gears. Many are now making a sales asset of the greater accuracy and quieter operation of Fellows-generated gears. Lower production cost on a Fellows Gear Shaper enables the manufacturer to offer a high-quality product at a lower price. If you are not acquainted with the part that Fellows can play in high quality gear production at less cost, our Sales Engineers will be glad to give you the facts. Contact our nearest office.

Fellows

The Fellows Gear Shaper Co., Head Office and Export Dept., Springfield, Vermont. Branch Offices: 616 Fisher Building, Detroit 2; 640 West Town Office Building, Chicago 12; 7706 Empire State Building, New York 1.

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK



**universal
joint**

Trouble?

**Replace them quickly
and easily. . . . with**

CURTIS UNIVERSAL JOINTS

The Curtis "Telltale" lock ring makes disassembly and reassembly of universal joint connections a simple and economical operation. No dismantling of shafts — a minimum of "down time" required for change.

Time-proven under many different conditions and applications, Curtis Universal Joints have conclusively shown their superiority — in the field and in laboratory tests.

Because of their proven quality, manufacturers are specifying "Curtis" more and more. They have found it pays to use "Curtis" as a "standard" in their original equipment. Their customers are better satisfied — fewer replacements are needed, and they are assured of furnishing the best by every test.

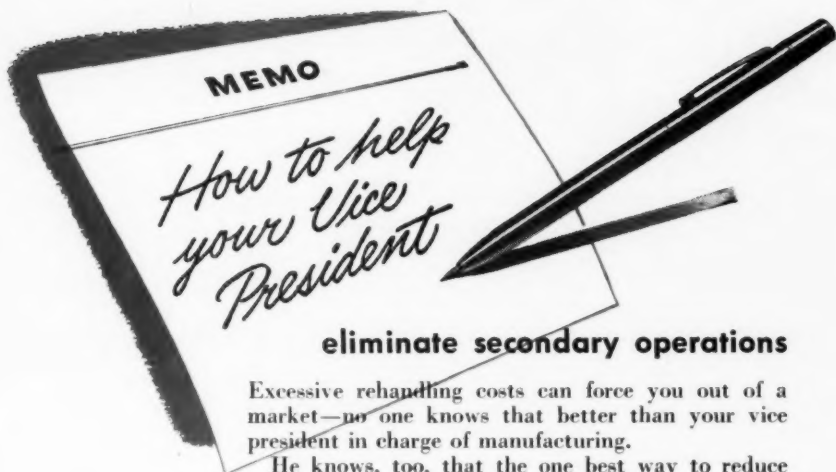
Specify the best for original or replacement use — specify Curtis.



◀ "Telltale" Lock Ring readily visible — shows joint is securely locked.

WRITE DEPT. B-1

@ CURTIS UNIVERSAL JOINT CO. INC.
4 BIRNIE AVENUE • SPRINGFIELD 7, MASSACHUSETTS



eliminate secondary operations

Excessive rehandling costs can force you out of a market—no one knows that better than your vice president in charge of manufacturing.

He knows, too, that the one best way to reduce part costs is to do more operations before the work leaves the automatics. But does he know that the most recent developments in tooling the new Acme-Gridley automatics often eliminate not only one but two and three rehandlings?

A few pertinent case studies showing how other manufacturers have cut their piece costs substantially—by reducing handling time, machine overhead and floor space—may remind him what the new Acme-Gridleys can do for you. Here's a typical example; we'll gladly give you more. No obligation, of course.

CUT THIS OUT FOR USE WHEN YOUR VICE PRESIDENT WANTS PROOF

AN ACME-GRIDLEY CERTIFIED CASE STUDY

THIS IS WHAT HAPPENED:

PART TURNED—Bicycle Pedal Shaft

SIZE— $\frac{3}{4}$ " dia. x $4\frac{5}{8}$ "

MATERIAL—B-1112 Steel

MACHINE— $1\frac{1}{4}$ " RA 6 Spindle Acme-Gridley Bar Automatic

OPERATIONS—13, including shave large thread diameter, and roll thread, mill flats or large diameter, die cut thread and mill keyway on small end

MACHINING TIME—15 seconds, complete



ACME-GRIDLEY BAR and CHUCKING AUTOMATICS built in 4, 6 and 8 spindle styles, maintain accuracy at the highest spindle speeds and fastest feeds modern cutting tools can withstand.

THE NATIONAL ACME COMPANY

170 EAST 131st STREET • CLEVELAND 8, OHIO

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

*Substitute 1 Machine
for 3 or 4!*

RAISE PRODUCTION and LOWER COSTS.
BY COMBINING OPERATIONS with

the **MOTCH & MERRYWEATHER**

"DE" (Double End)
**TRANSFER
MACHINE**

1 SAWS
STOCK TO
ACCURATE LENGTHS

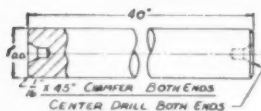
2

- (1) Chamfers both ends.
- (2) Center drills both ends.
- (3) Center drills and chamfers both ends. (4) Threads both ends (to a reasonable length).
- (5) Trepanns one or both ends (box).
- (6) Turns one or both ends (I.D. tool).
- (7) Chamfers O.D. and I.D. of tubing.
- (8) Reams one end or both ends of tubing.
- (9) Chamfers O.D. and reams both ends of tubing.

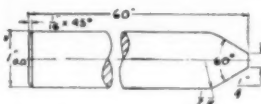
MORE THAN A NEW MACHINE—ACTUALLY A NEW METHOD

• The Motch & Merryweather "DE" (double end) Transfer Machine has no equivalent. Standard bar stock is automatically fed, cut off with a square milled finish to accurate lengths of $\pm .004"$; then automatically transferred to equalizing, self-centering jaws for accurate double-end machining. You save at least one operator, save several handlings; save overhead and floor space; save tooling. Husky construction makes for trouble-free service and long, profitable life.

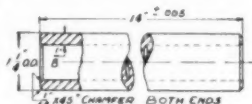
Illustrated below are six typical "transfer" jobs.



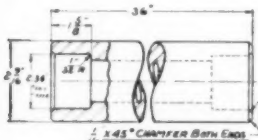
Operation: Cut off, chamfer and center drill both ends.
Material: SAE 1040 ground shafting.
Production: 240 pcs/hr.



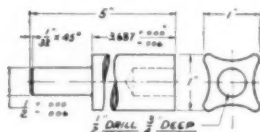
Operation: Cut off, chamfer one end, point opposite end.
Material: D SAE 1141 C. R.
Production: 163 pcs/hr.



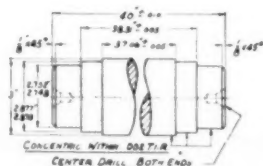
Operation: Cut off and chamfer both ends
Material: 1020 seamless tubing
Production: 342 pcs/hr.



Operation: Cutoff, bore and chamfer inside and outside, both ends.
Material: SAE 1020 tubing.
Production: 180 pcs/hr.



Operation: Cut off, turn one end, drill opposite end.
Material: Extruded brass.
Production: 200 pcs/hr.



Operation: Cut off, box mill, turn and center drill both ends.
Material: SAE 1020.
Production: 140 pcs/hr.

THE MOTCH & MERRYWEATHER MACHINERY CO.
PENTON BUILDING CLEVELAND 13, OHIO

AT YOUR COMMAND • AN UNPARALLELED EXPERIENCE IN CIRCULAR SAWING

Letter from England



Written for the MACHINE and TOOL BLUE BOOK by Robert Hutcheson, Editor of MACHINE SHOP MAGAZINE, London, England.



One industry that seems to stay healthy and maintain a high export percentage is that of bicycle building. A further curious fact about it is that it does not suffer from competition from your country. In my last letter I said that the type of product which satisfies the American home market appears to satisfy all other nations, but I should have made an exception to this general statement in the case of bicycles. We recently paid a visit to a bicycle making plant in the heart of the Country of Kent and in the shipping department were cases of bicycles awaiting delivery to every conceivable place in India, China, Malaya, Africa and all those "faraway places with strange-sounding names." Thanks to a big home market for bikes, a pretty high state of efficiency has been reached in the industry. About one in four people in Britain own a bicycle, every village policeman and rural mailman rides one, millions of people ride to work on them every day and women do their shopping by bike.

One difference, or rather many differences, between British and American design lies in the constant striving by British manufacturers to reduce the weight of the machine. It is now possible to obtain a strong bicycle that will stand up to a lot of rough riding which has a gross weight of about 20 lb. This weight reduction has been achieved by the adoption of the 1 1/4 inch tire as a standard, the use of

cable operated brakes instead of coaster hubs and an all round paring away of metal. The industry works with a highly developed supply of standard components. The factory which we visited assembled bicycle frames from standard pre-cut and formed tubes obtained from specialist firms. There was not a single machine tool to be found in the factory and about 90 per cent of the work was done by hand so that the business of the firm really consisted of bicycle assembly, finishing and selling. The daily output ran into several hundreds of which 80 per cent are exported.

X X X X

The sole topic of conversation these last few weeks has been about another dock strike. The difference between this one and the others lies in the international causes behind the fracas. Two Canadian ships came into the London docks and as soon as the ships tied up their crews went on strike, the reason being that their trade union back home was on strike. In sympathy, some London dockers refused to work the ships so the London Dock Labour Board came back with the statement that the men would work those ships or none others. A deadlock arose and finally resulted in 15,000 dockers (longshoremen) being idle. The strikers called it a lockout, but everybody else called it a strike and the usual thing happened, the armed forces were dragged into the job of unloading the ships in order to prevent the City of London

1 **SAWS STOCK TO ACCURATE LENGTHS**

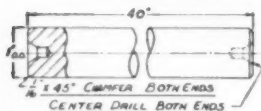
2

- (1) Chamfers both ends.
- (2) Center drills both ends.
- (3) Center drills and chamfers both ends.
- (4) Threads both ends to a reasonable length.
- (5) Trepanns one or both ends.
- (6) Turns one or both ends (box tool).
- (7) Chamfers O.D. and I.D. of tubing.
- (8) Reams one end or both ends of tubing.
- (9) Chamfers O.D. and reams both ends of tubing.

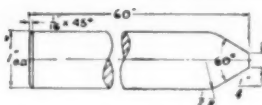
MORE THAN A NEW MACHINE—ACTUALLY A NEW METHOD

- The Motch & Merryweather "DE" (double end) Transfer Machine has no equivalent. Standard bar stock is automatically fed, cut off with a square *milled finish* to accurate lengths of $\pm .004"$; then automatically transferred to equalizing, self-centering jaws for accurate double-end machining. You save at least one operator; save several handlings; save overhead and floor space; save tooling. Husky construction makes for trouble-free service and long, profitable life.

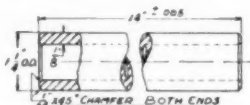
Illustrated below are six typical "transfer" jobs.



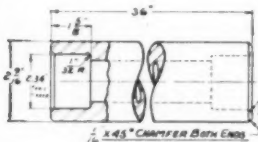
Operation: Cut off, chamfer and center drill both ends.
Material: SAE 1040 ground shafting.
Production: 240 pcs/hr.



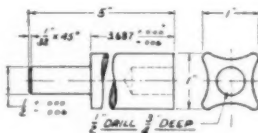
Operation: Cut off, chamfer one end,
point opposite end.
Material: D SAE 1141 C. R.
Production: 163 pcs/hr



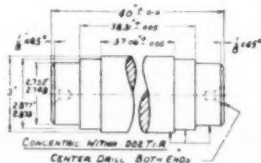
Operation: Cut off and chamfer
both ends
Material 1020 seamless tubing
Production 342 pcs/hr



Operation: Cut off, bore and chamfer inside and outside, both ends.
Material: SAE 1020 tubing.
Production: 180 pcs/hr.



Operation: Cut off, turn one end, drill opposite end.
Material: Extruded brass.
Production: 200 pcs/hr.



Operation: Cut off, box mill, turn and center drill both ends.
Material: SAE 1020.
Production: 140 pcs/hr

THE MOTCH & MERRYWEATHER MACHINERY CO.
PENTON BUILDING CLEVELAND 13, OHIO

AT YOUR COMMAND • AN UNPARALLELED EXPERIENCE IN CIRCULAR SAWING

Letter from England



Written for the **MACHINE** and **TOOL BLUE BOOK** by Robert Hutcheson, Editor of **MACHINE SHOP MAGAZINE**, London, England.



One industry that seems to stay healthy and maintain a high export percentage is that of bicycle building. A further curious fact about it is that it does not suffer from competition from your country. In my last letter I said that the type of product which satisfies the American home market appears to satisfy all other nations, but I should have made an exception to this general statement in the case of bicycles. We recently paid a visit to a bicycle making plant in the heart of the Country of Kent and in the shipping department were cases of bicycles awaiting delivery to every conceivable place in India, China, Malaya, Africa and all those "faraway places with strange-sounding names." Thanks to a big home market for bikes, a pretty high state of efficiency has been reached in the industry. About one in four people in Britain own a bicycle, every village policeman and rural mailman rides one, millions of people ride to work on them every day and women do their shopping by bike.

One difference, or rather many differences, between British and American design lies in the constant striving by British manufacturers to reduce the weight of the machine. It is now possible to obtain a strong bicycle that will stand up to a lot of rough riding which has a gross weight of about 20 lb. This weight reduction has been achieved by the adoption of the 1 1/4 inch tire as a standard, the use of

cable operated brakes instead of coaster hubs and an all round paring away of metal. The industry works with a highly developed supply of standard components. The factory which we visited assembled bicycle frames from standard pre-cut and formed tubes obtained from specialist firms. There was not a single machine tool to be found in the factory and about 90 per cent of the work was done by hand so that the business of the firm really consisted of bicycle assembly, finishing and selling. The daily output ran into several hundreds of which 80 per cent are exported.

X X X X

The sole topic of conversation these last few weeks has been about another dock strike. The difference between this one and the others lies in the international causes behind the fracas. Two Canadian ships came into the London docks and as soon as the ships tied up their crews went on strike, the reason being that their trade union back home was on strike. In sympathy, some London dockers refused to work the ships so the London Dock Labour Board came back with the statement that the men would work those ships or none others. A deadlock arose and finally resulted in 15,000 dockers (longshoremen) being idle. The strikers called it a lockout, but everybody else called it a strike and the usual thing happened, the armed forces were dragged into the job of unloading the ships in order to prevent the City of London

from starving. After about three weeks of idleness, the dockers went back to work. Now an enquiry is to be held by the government into the causes of the stoppage. It seems that our red friends had a lot to do with fomenting the dispute. What surprises everyone here is the potent magic that the reds seem able to weave around certain sections of labour. If the dockers could be talked into striking, could they not have been as easily talked into staying at work? Nobody gained anything from the recent dispute, in fact, everybody lost except the commies'. If this international angle on labour begins to grow, one can visualise coal miners in Timbuctoo coming out in sympathy with strikers in any other part of the world.

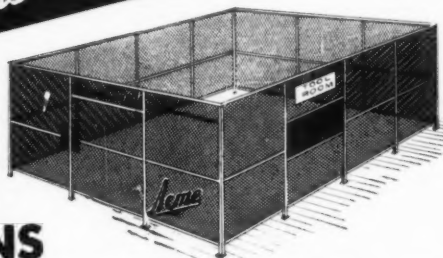
X X X X

The Ministry of Education have just published their report on the results of advanced elementary school leaving age which is now set at 15 years of age instead of the former 14. I think the British educational system is considered to be the best value for time and money obtained by any nation in the world. Education in elementary schools (public schools) is

compulsory from the age of 5 to 15 years and during these ten years of schooling a lot of education is driven into their craniums. The average yearly vacations add up to about 9 or 10 weeks in all, and while they are attending school the pupils are driven pretty hard, at least in comparison with American standards. The report mentioned above says that the extra year in school is turning out a more finished product than before. Employers do not like apprentices to reach them at an age exceeding 16 years so it will be obvious that the employer here sets no great store on two years in high school. He favours a policy of works experience mixed with part time day and evening education in technical schools. The number of day continuation students released by employers has increased from 167,500 to 190,000. Their activities at the day continuation schools are confined to the study of administration and practical science. The cutting and carving of metal, for instance, is taught by the employer in his own works while the theoretical part of it is supplied by the technical school. Some of us over here feel that gaps exist

Leaders for 50 Years
1899-1949

TOOL CRIBS and PARTITIONS



Standard Sections Woven Wire Mesh Panels and Doors to enclose Tool Cribbs, Stock rooms and other enclosures.

IMMEDIATE DELIVERY

Write for Catalog

Acme Wire & Iron Works
3519 E. Canfield ———— Detroit 7, Mich.

This Nicholson cartoon ad is one of many appearing monthly in *The Saturday Evening Post*.

STEADY advertising and good distribution can help a product gain the top, but only *high quality* and *good value* can keep it there. That's where Nicholson and Black Diamond files have been for years—to make Nicholson the world's largest file manufacturer.

High quality in these world-famous files is a combination of a number of things: Expert design (always *The right file for the job*), high-grade file steel made to our own specifications, even-surfaced blanks and accurate cut, uniformly correct hardening . . . these are major features assured through rigid controls and check-ups at every stage of production.

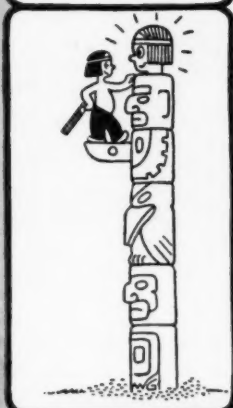
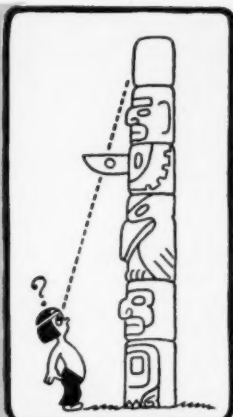
Whether you use files in large or small quantities, you're money ahead with dependable, fast-cutting, long-lasting Nicholson or Black Diamond brands. Let your industrial distributor be your consultant as well as your supplier.

FREE BOOK, "FILE PHILOSOPHY," for your key shop and purchasing men. *How many copies?*

NICHOLSON FILE CO., 16 Acorn St., Providence 1, R. I.
(In Canada, Port Hope, Ont.)

NICHOLSON FILES
for every purpose

**What made them
"largest selling"?**



a Nicholson file
for every purpose

World's largest selling file brands—available at good hardware, implement and industrial-supply dealers.



in this system. The employer's works may not represent ideal practice for that particular industry while the theoretical training supplied by the schools is not of immediate practical value. It is only very recently, for instance, that the science of production and tool engineering has been recognised as an important branch of technology and courses provided.

X X X X

It will be noticed by readers of these letters that we are rarely able to give any news about machine tool development work. The reason for this is that very little in the way of new techniques actually takes place. There is a strong tendency on the part of machine tool manufacturers to build American machine tool designs under licence over here and we were recently able to ask a firm of manufacturers why such a state of affairs exists. It was pointed out to us that machine tool manufacture does not rate as a major industry in Britain. The largest firms are very old established and set in their ways while the vast bulk of the industry is composed of small plants of 200 employees,

or less. The complication of modern machine tools resulting from the fitting of hydraulic, electrical and pneumatic equipment renders development of, and experiments with, new designs too expensive for the small manufacturer to afford. Restrictions by the government on the re-equipping of industry have dealt a severe blow to the machine tool trade who must now bend all their energies to selling abroad. One peculiar anomaly with reference to the selling price of British machine tools in Latin America has arisen out of British-made American designs. Pre-war machine tools from this country were characterised by low price and simple design and sold well in Latin-America. Post war buyers expected the same type of product from Britain. In fact, we are told on good authority that the Latin-American is prepared to pay higher prices for a U.S.A. tool than he would for a British article of comparable quality. Now that British-built American designs are available the South American will pay the equivalent of the U.S.A. price without complaint. This living down the

TAP NO. 2-56 to $\frac{3}{8}$ " IN STEEL with *One* DORMAN TAPPER

Don't waste time and money using three ordinary tappers to tap No. 2-56 to $\frac{3}{8}$ " in steel when **one** DORMAN TAPPER with automatic reverse and torque control does the job easily. It takes only one minute to set the friction drive of a DORMAN TAPPER for automatic operation. This automatic feature eliminates the need for controlled pressure to prevent tap breakage — eliminates the need for a skilled operator.

FOUR SIZES

- | | |
|--|--|
| No. 1 — capacity 2-56 to $\frac{3}{8}$ "
in steel | No. 3A — capacity $\frac{1}{2}$ " to $1\frac{1}{4}$ "
in steel — $\frac{1}{2}$ " to $\frac{3}{4}$ " Pipe Taps |
| No. 2B — capacity $\frac{3}{8}$ " to $\frac{7}{8}$ "
in steel | No. 4A — capacity $\frac{3}{4}$ " to 2"
in steel including Pipe Taps |

Immediate Delivery

Efficient Production Threaders with

ROUND SPLIT • BUTTON • ACORN DIES

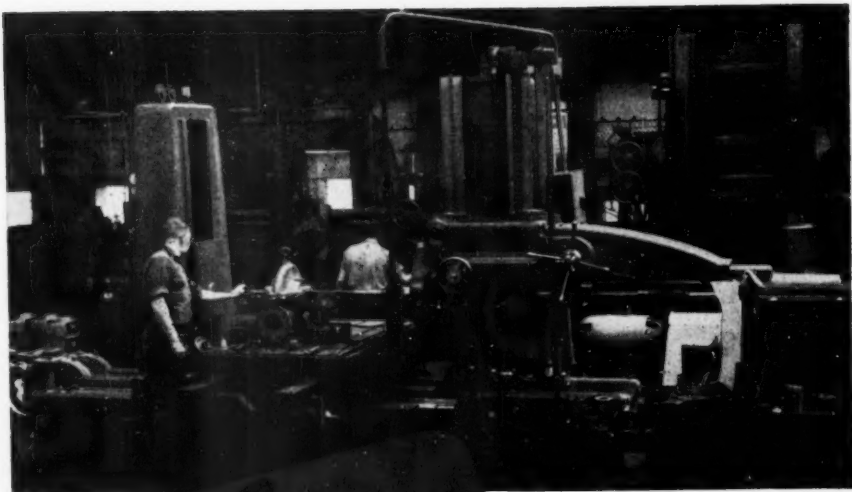
Complete Line of THRIFTMASTER MULTIPLE SPINDLE Adjustable
and Fixed Center Drillheads Priced from \$189.00



LOW PRICED
from
\$44.00

Write for
Bulletin

THRIFTMASTER PRODUCTS CORP., 1030 N. PLUM STREET, LANCASTER, PA.



4" Universal Boring Machine boring 3" Discharge Centrifugal Pump.

CALL IT

User Preference
for
**UNIVERSAL
NOW...**

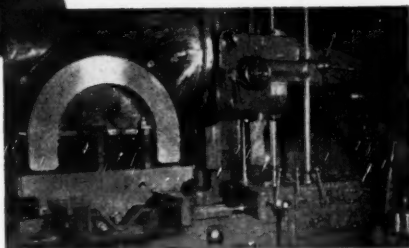
**BULLARD - *Universal*
BORING, DRILLING and
MILLING MACHINE . . .**

Customer satisfaction is tested and here are the findings:

"Performance plus" is a user comment.

Another user states "We replace Universals with Universals."

Still another says "When we put a job on this tool, it comes off right. We had decided on another make but after seeing and studying Universal, we changed our minds."



Face milling massive section of Double-suction Pump.

One satisfied customer has used Universals since 1925. At present he has five in his plant, one recently purchased, two 10 years old, a fourth 16 years and the fifth with 18 to 20 years of service.

These comments, plus Bullard Proficiency in Engineering, are reasons why you should investigate and study Bullard-Universals for your shop. Write today for data on 3-4 and 5-inch spindle machines.

THE BULLARD COMPANY
BRIDGEPORT 2, CONNECTICUT

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

TROYKE ROTARY TABLES
WORM WHEEL OPERATED
ROTARY TABLES . . .




9" - 12" - 15" -
 18" - 21" - 25"

BALL BEARING STATION
INDEXING TABLES . . .



12" - 15" - 18"

See your
 dealer or
 write for
 Catalog 14

TROYKE MFG. CO. 
 CINCINNATI 9, OHIO, U.S.A.

past is only one of the difficulties with which our machine tool builders have to grapple.

X X X X

A political battle over the nationalisation of the Iron and Steel Industry now rages in the British Parliament. Production is at a high level and labour relations within the industry were never more tranquil, but the Government consider that they were given a free hand to nationalise what they liked at the last general election, the opposition claim that the government is exceeding the powers granted to it by the electorate. What makes the battle more intense is the fact that a general election is due sometime near the turn of the year, and the opponents of the bill are throwing up every barrier and obstruction on which they can lay their hands in the hopes that the election can be held before the bill finally becomes law. There is no doubt that whichever side wins the tussle, the repercussions on the nation will be important, and all are watching the trend of battle with more than usual interest.



STANDARD
D-4
Abrasive
Band
Grinder

Famous
 for
 Stamina

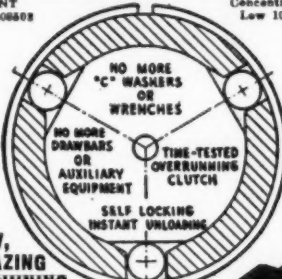
This new, streamlined bench type grinder assures fast, quality finishing on metals, plastics, wood, fibre... at low cost. Built to machine tool specifications, Standard D-4 is equipped with improved band tension control and specially designed protective motor hood 4x36 1/4" band. The ideal portable unit.

OTHER STYLES AND SIZES IN NEW
MANUAL ON FINISHING—WRITE TODAY

WALLS SALES CORP.
 206 E. 38th St., New York 16, N.Y.

PATENT
 No. 2608808

Concentricity 1m
 Low 10,000 lbs




NEW, AMAZING MACHINING TECHNIQUE

YOUNG PRECISION EXPANDING MANDRELS FOR PRODUCTION OR INSPECTION

Curtiss-Wright Corporation ranks our product with their best tools. Cleveland Graphite Bronze Company, leading bearing manufacturer, states new high accuracy reached, plus substantial production boosts.

ROUGHLY SKETCH DESIRED MANDREL INTO YOUR FART PRINT AND FORWARD FOR QUOTES.

YOUNG ARBOR CO. • PH. Tower 1-3076
 2140 Seranton Road Cleveland 13, Ohio





PROFITS



COSTS

PORTELVATOR the HANDY HAMILTON PORTABLE ELEVATING TABLE

★
Fast-lift
and slow-lift
Mechanism

★
Self locking
at any height

★
Positive
floor-lock

★
Anti-friction
casters



★
Three
table
surfaces

★
Four
point
support

★
May be
worked-at
from all sides

★
One man
can safely
lift and carry
loads
usually
requiring
the strength
of four

ELEVATES • LOWERS • TRANSPORTS

Table locks securely wherever stopped.

WILL NOT TIP OR SLIP

A work bench when and where you need it.

WRITE FOR BULLETIN

giving detailed data

DO IT NOW

You may need this handy helper soon.



THE
Hamilton
TOOL COMPANY

SUPER SENSITIVE DRILLING MACHINES
TAPPING MACHINES • PORTELVATORS

826 SO. NINTH STREET • HAMILTON • OHIO • U • S • A

CAM-OPERATED, DOUBLE-ACTION ROOFING PRESS

Raises Output, Lowers Maintenance

by Gerald Eldridge Stedman



To meet production schedules, Southern States Roofing designed a cam-operated, double-action roofing press which improved forming accuracy, increased production, and lowered maintenance costs. This and several other installations at this company's plants are described.

THE SOUTHERN States Iron Roofing Company, with main plant and offices in Savannah and ten factories and warehouses throughout the South, is a virile and progressive southern metal-working industry, fabricating and selling under the trade name SSIRCO. It produces steel and aluminum roofing and shingles, prefabricated aluminum buildings, steel barrels, turpentine cups and aprons.

Supervisional ratio is one to 15; lost time accident frequency is 5.7, severity is 0.1, scrap loss is less than one per cent. The company designs many of its own tools and dies as well as much of its own machinery.

For example, SSIRCO has simplified and speeded up production of its crimped turpentine gutters by a new progressive die design. In explaining it to me, W J. Mahany, Vice President in Charge of Operations, said:

"The V-type gutters, which are cut from odd-shaped galvanized steel drum shearings, were formerly a four-operation job. Blanks were cut in three operations on foot shears and then formed on a power press. Two blanking shears were required to feed one forming press.

"With the new die, the power press formerly used only for forming has been converted into a complete production machine which blanks and forms in one operation. This eliminates the slow, tiresome shearing operation.

"The blanking part of the die is forward of the forming section and is raised slightly above it. On the downward stroke of the press a $2\frac{1}{2}$ " x 9" blank is cut, and at the same time the forming section of the die forms at a 90° angle the blank which was cut during the preceding downward stroke. On the upward stroke the formed gutter is automatically ejected at the rear of the press, as the newly-cut blank slides into position on the forming section. The press is inclined to provide gravity flow of material."

Mr. Mahany reports that use of the new die has increased production of the gutters by 118 per cent. In addition, elimination of the shearing operation

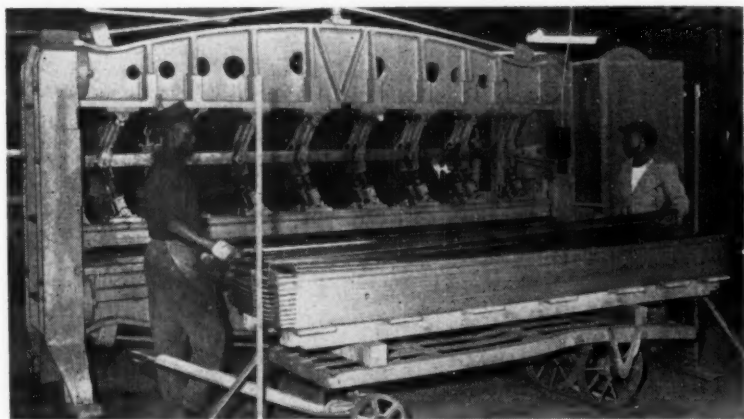
has reduced worker fatigue immeasurably.

I particularly want to write of this company's achievement in the design of a cam-operated double-action roofing press that has improved forming accuracy, made possible unusual production increases, resulted in fewer breakdowns and has very materially reduced maintenance problems.

"At the close of World War II," Mr. Mahany explained, "there was a tremendous backed-up demand for metal roofing. To fill this demand, we embarked upon a program to gear up our production of metal roofing.

"The first requirement was a new machine which could form roofing much faster—and more accurately—than the old style toggle presses. A search of the machine industry revealed that no machines of this kind were on the market. Even toggle

Fig. 1. SSIRCO 5-V-Crimp Aluminum Roofing being formed on Southern States Iron Roofing Company's Cam-Operated Double-Action Roofing Press in the company's Savannah, Ga. plant. Vertical rods at each end of the hand truck are gauges for stacking formed roofing on the skid. Roofing is staggered in sections of twelve sheets to facilitate counting and removal of sheets from the stack for shipping. Worker fatigue is reduced by the easy working height of the skid and by rubber foot mats which cushion the concrete floor.



presses were no longer being manufactured.

"Using the toggle press as a basis, a machine was designed and built in the company's Birmingham, Ala. machine shop. This machine is called the "Cam-Operated Double-Action Roofing Press". It is heavier and stronger than the toggle presses; its precision cut gears reduce vibration and increase forming accuracy. It has a slightly longer stroke which gives it 150 per cent greater production capacity. Costly breakdowns have been virtually eliminated by a new three-jaw clutch. All parts are interchangeable among the machines, greatly reducing maintenance problems," Mahany concluded. See figures 1 and 2.

The roofing press forms crimps and corrugations with absolute accuracy. This is made possible by precision-cut, smooth running gears which reduce vibration to a negligible point, and by split-second timing of double-action forming rams. The front ram hits the sheet as it goes into the machine and

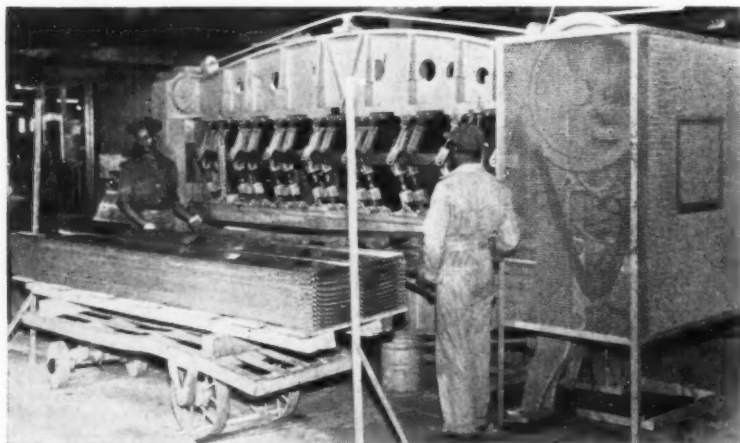
holds it for an instant until the back ram can hit, thus preventing movement of the sheet which might cause distortion of the crimps.

Production was speeded up on the new roofing press by giving it a longer stroke than the toggle press, providing just enough extra clearance for the sheets to move through the machine at a faster rate. This and other features on the machine, plus improved dies, result in an output of approximately 1000 sheets per hour—an increase in production of 150 per cent.

Much production time was lost in using the toggle press because of frequent breakdowns during high speed operation. These breakdowns were caused principally by the operating latch. This trouble has been eliminated almost 100 per cent on the roofing press by using a precision machined three-jaw clutch designed to withstand the strain of long runs at top speed.

The problem of maintaining machines in four roofing manufacturing plants widely dispersed among the south-

Fig. 2. Double-Action Roofing Press showing closeup of power section. Heavy screen safety guard covers all fly wheels, gears, cams, and electric motor.



eastern states, has been greatly simplified by the design of the roofing press. All parts are interchangeable among the machines so that stock parts can be made with assurance of perfect fitting, regardless of the machine on which they are used.

Since the new roofing presses have been in steady operation, Southern States reports that direct labor costs of manufacturing sheet roofing have been reduced approximately 36 per cent, although wages have doubled. Lost production time has been eliminated practically 100 per cent, and maintenance work has been reduced to periodic routine checkups.

The machine is a 35 T press—powered by a $7\frac{1}{2}$ horsepower, 60 cycle 3-phase motor, 220/440 volts. Power is transmitted by "V" section belt to drive fly wheels and through gears to the twin cams.

Each cam applies horizontal movement to a toggle bar through a cam latch. Each toggle bar is connected to a series of eight toggle joints which are fastened to the upper press frame and the forming ram. Movement of the

toggle bar straightens the joints and causes the ram to plunge downward and hit the sheet being formed. Dies are attached to the $4\frac{1}{2}$ " ram face and to the press bed.

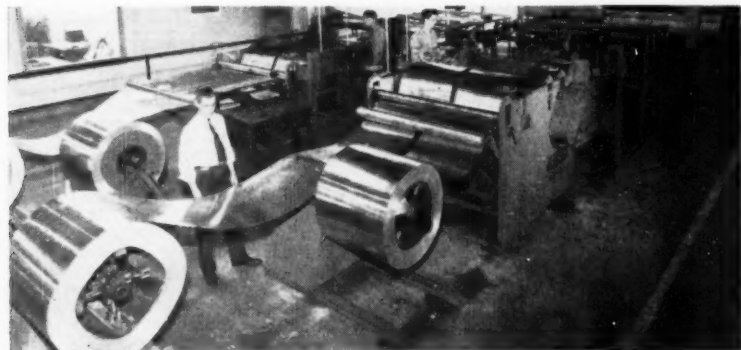
Pressure on each toggle is accurately controlled by a toggle knuckle and toggle adjusting screw. This permits adjustment of pressure at eight different points along each ram, so that the most efficient operating pressure for precision-forming of the crimps and corrugations can be established for each different style of roofing.

Operation of the machine is controlled by a foot lever which works the clutch and brake. Pressure on the operating ram when it makes the forming hit is equalized by two compression springs on each ram.

Stroke of the machine is $2\frac{1}{4}$ inches. The press operates at 35 strokes per minute. Three hits are required to form $2\frac{1}{2}$ -inch corrugated, and 5 hits to form $1\frac{1}{4}$ -inch corrugated and 5-V-Crimp. Four sheets of .019 inch aluminum are formed in a single operation. An operator and three helpers are required to operate the press.

• • •

Fig. 3. These twin coil flattening and shearing machines automatically shear 1500-pound coils of aluminum into standard roofing lengths for SSIRCO Roofing and Siding. Running at the rate of 150 feet per minute, one of these Southern States-constructed machines can handle approximately 70,000 of aluminum in an 8-hour day.



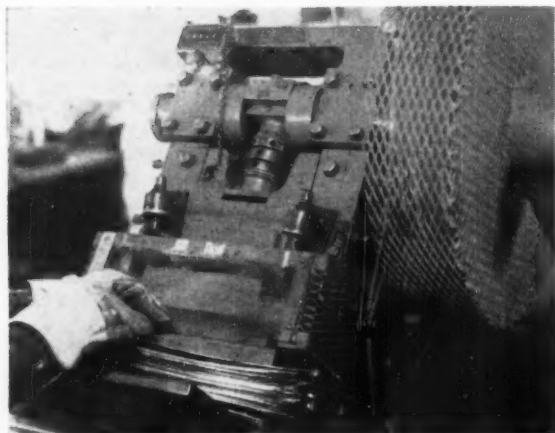


Fig. 4. This electrically-powered crimped turpentine gutter press illustrates the excellence of Southern States' safety practices. The press is completely guarded. Visibility into the die area is provided by the 1/4-inch thick non-breakable transparent shield on the front of the machine. The operator wears gloves and arm guards to prevent cuts while handling the steel.

There is an adjustable table on each side of the machine. Gauges are bolted to the tables. Sheets are put into the machine from the back and are pulled through to the front by the two men on the front side. Formed roofing is

placed on skids.

Southern States makes its own patterns for the roofing press, and makes all parts except the heavy frames in its shops in Savannah, Georgia and Birmingham, Alabama. The press is of cast iron construction. The cams are hard bronze. Bushings and bearings are brass.

Overall dimensions are—5 feet wide (table to table), 16 feet long, 8 feet 6 inches high.

The press will handle sheets up to 12 feet 2 inches long. It can form aluminum up to .032 inch thick and steel up to 20 guage. Weight of the press is approximately 20,000 pounds. THE END.

91,994

TORNADO*

Portable Electric BLOWERS

and

VACUUM CLEANERS



SOLD to American Industry: Proof positive that TORNADOs do the maintenance job quicker, easier and better than any similar equipment.

* Trade Mark Reg. U.S. Pat. Off.
 † As of November 8, 1948

So confident are we that TORNADOs Portable Electric Blowers and Industrial Vacuum Cleaners will prove their value to you in your own plant, that we will gladly send you the equipment for a FREE TRIAL.

Write today for details of this offer.

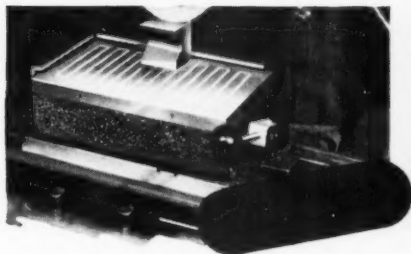
Breuer Electric Mfg. Co.
 5128 Ravenswood Ave., Chicago 40, Ill.

The Greenfield Tap and Die Corporation announces the removal of their Twist Drill manufacturing facilities from Jackson, Mich. to Greenfield, Mass. Actual moving is now underway and is expected to be completed by September 1.

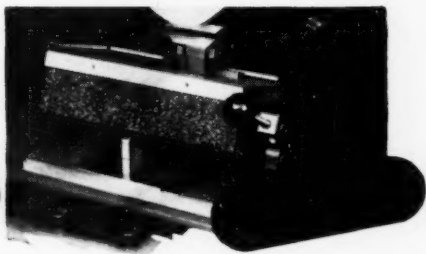
The corporate structure of the Ampco Twist Drill Corporation has been dissolved and all assets transferred to Greenfield where a complete drill making establishment is being set up.

Frank J. Sikorovsky, president and general manager of the former Ampco Twist Drill Corporation, becomes a vice president and director of the Greenfield Tap and Die Corporation.

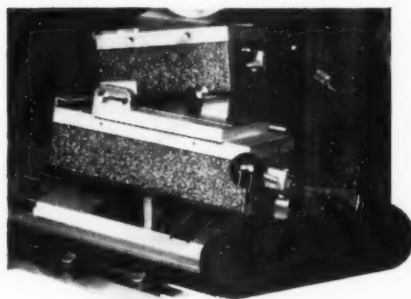
The **MAGNA-SINE** is more versatile than any other magnetic chuck



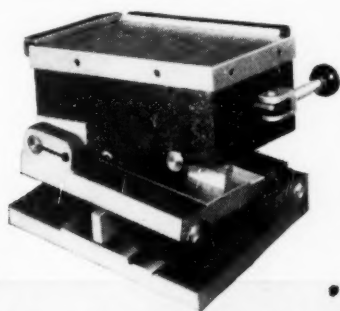
The Magna-Sine, when closed, serves as a conventional magnetic chuck for surface grinders. The chuck is permanent-magnet type and built to precision tolerances. Suitable for either wet or dry grinding.



When an angular job comes along, the Magna-Sine is accurately set up by inserting standard gauge blocks. The proper blocks are indicated in the Table of Constants furnished with each unit. Think of the saving; angular set-ups—to gauge block accuracy—made in a matter of minutes with the Magna-Sine.

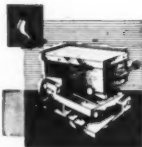


For compound angular work, add another single angle Magna-Sine.* The additional unit may be held securely by the magnetic chuck of the first unit. Any desired compound angle can be set up fast and with positive gauge block accuracy.



*This unit is the Magna-Sine for both single and compound angular set-ups. It can be used for parallel work, single angle or compound angle set-ups. Available in two sizes.

Send for completely descriptive bulletin showing models and prices. See how YOUR shop can save by using Magna-Sines on all surface grinders as well as angular set-ups for inspection, jig boring and other precision operations.



OMER E.

Robbins

COMPANY

Manufacturers of the MAGNA-SINE and Other Precision Tools

5722 Twelfth Street

Detroit 8, Michigan

REDUCE INVENTORY

Follow the lead of wise planners. Don't tie up money in big stocks of wheels.

RAPID SERVICE

Let us hold your stock—without heavy investment on your part. Through the increased facilities of our modern new plant, we are in position to give you the finest service in the industry.

AVOID OBSCOLESCENCE

by reducing inventory. Get your wheels as you need them, made to your particular specifications.

**COME TO
MOUNTED
WHEEL
HEADQUARTERS**

STARTLING ADVANCE BETTER FINISHES

IN
AT
NO INCREASED
PRODUCTION
COST

FV BOND

This improved bond is starting another trend in the abrasive industry. Used only in Chicago Grinding and Mounted Wheels—the result of half a century testing and experience.

F. V. Bonded Wheels will produce finishes that are superior and have a lower RMS without sacrificing production.

FREE ENGINEERING SERVICE. Let us help with your grinding problems. Send for Engineering Data Sheet making it easy for you to submit information from which we can recommend the wheel to do your job best.

CHICAGO WHEEL & MFG. CO.

Makers of Quality Products since 1895

1101 W. Monroe St.

Dept. HB

Chicago 7, Illinois

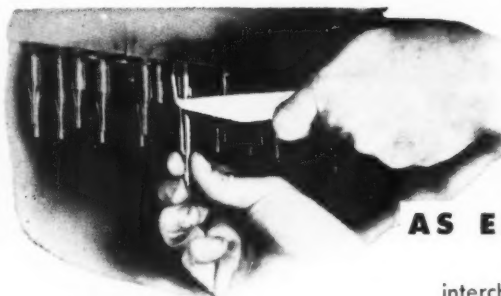
☐ SEND DATA SHEET, NAME _____
INTERESTED IN:
☐ GRINDING WHEELS ADDRESS _____
☐ MOUNTED WHEELS CITY _____
☐ SEND CATALOG STATE _____




INTERCHANGEABLE PUNCHES and DIES


Click!


AND THEY'RE INSTALLED



**AND JUST
AS EASY TO REMOVE**

A push and a twist on any  interchangeable punch or die and it's securely locked, both vertically and radially. This easy installation and easy removal feature cuts press "down-time" for punch or die replacement to a minimum. No disassembly of the die is necessary.

 punches and dies save time and money in die building, too, because they are easily and accurately assembled in die construction. They are completely interchangeable; selected steels with controlled hardness are finished to very close tolerances to insure uniformity.

 standard punches and dies are stocked for immediate delivery. Punches and dies of special sizes, shapes and materials are made promptly to your specifications.

GET THE WHOLE STORY IN THIS FREE CATALOG

A 48 page book containing full information on Allied's "one stop service." Write for your copy.



ALLIED PRODUCTS CORPORATION

Department 35 • 4644 Lawton Ave. • Detroit 8, Michigan

DIE INNOVATIONS

Can Speed Operations



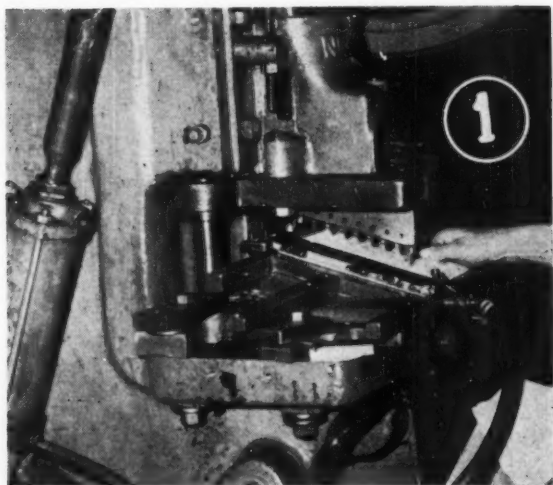
by Frank Charity

Many interesting developments in die design and the manufacture of products by press-work have been perfected in West Coast establishments. Some of these developments are described and illustrated by the author.

IN PRODUCTION work which necessitates the use of special dies, a number of striking developments have been recently achieved by western manufacturers.

Generally speaking, the incentive for the innovations has been to increase productivity or to lower operational costs; but in at least a few noteworthy cases, the result has been the adaptation of standard machine tools to unprecedented types of fabrication work.

A good example of methods whereby operational costs were lowered can be found at Bandel Manufacturing Company of Los Angeles, where small rubber pads are now being used in place of expensive mechanical knockouts on dies for the production of sheet metal articles with punch press equipment, figure 1. The pads are small blocks cut from vulcanized rubber sheet stock and attached to the face edges of ram die units so that they will be compressed to a negligible thickness when the dies are closed. Their function as knockouts is due to their elastomeric expansion characteristics when a press ram is raised, permitting separation of the upper die from the metallic sheet that has been blanked or otherwise fabricated. Besides costing less than mechanical knockouts, rubber pads thus utilized greatly simplify the work of designing and machining a considerable variety of punch press dies; and, if they are made from the best or most elastic grades of rubber, they are foolproof to the extent that they can be compressed more than 50,000 times without an appreciable loss of elasticity.

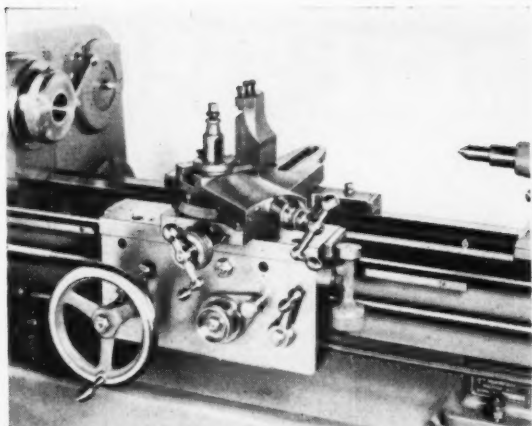


• • •

The Bandel knockouts might be described as only one of many tooling innovations related to the war-developed Guerin Process, whereby a rubber pad or "blanket" is used as the ram die unit for shaping sheet metal parts over inexpensive form blocks in a hydropress, figure 2. This process was originally considered suitable only for the fabrication of aluminum sheet materials, but has since been expanded so that it is adaptable to virtually all commercial sheet products — including steel and plastic laminates.

• • •





Wade NO. 8A
equipped with
**REAR STATION
TOOL BLOCK**
on the
**COMPOUND
CROSS SLIDE**

Here is a feature you'd never expect to find
on a lathe of this size . . . but we offer it
as one of the many unique advantages of the

Wade No. 8A TOOLMAKER'S PRECISION LATHE

This TOOL BLOCK, made of case hardened steel, is mounted on the rear station of the compound cross slide. It has a range of longitudinal adjustments, and will take cut-off or form tools. Naturally, it makes the No. 8A lathe more useful to you — eliminates the need of purchasing larger lathe equipment in order to have this very desirable feature.

And what about speeds? This lathe gives you stepless spindle speeds from 32 to 2000 r.p.m. — the only lathe of this size and type offering such a range! (With the back gears engaged, stepless spindle

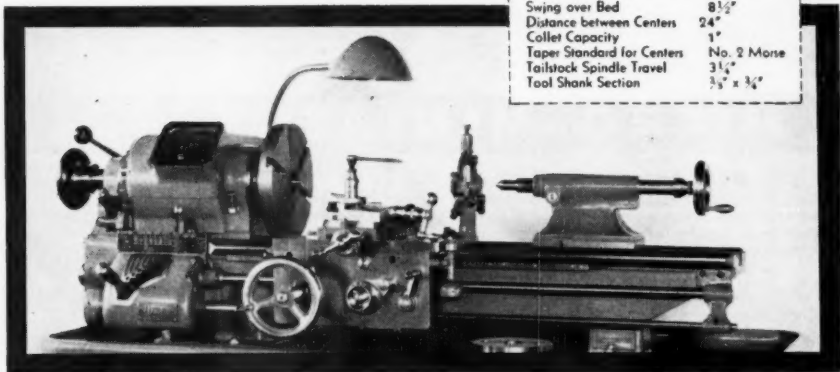
speeds are from 32 to 220 r.p.m.) An electric tachometer registers all speeds. The variable speed drive is entirely mechanical and is designed for the spindle speed to be changed while the drive is running; however, no damage will occur if the operator should attempt to change the spindle speed when the motor is stopped.

OTHER IMPORTANT NEW FEATURES are fully described in our circular — better write today for a copy. Just say "Wade No. 8A Bulletin, please!"

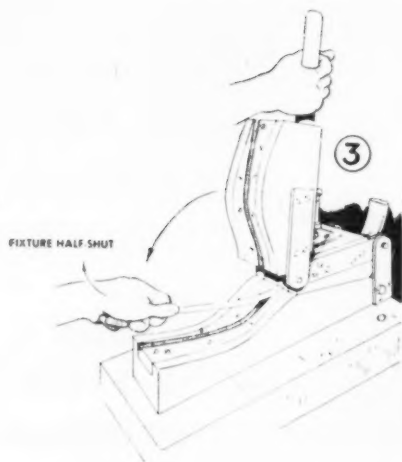
THE WADE TOOL CO. 51 River St., Waltham 54, Mass.

SPECIFICATIONS

Swing over Bed	8 1/2"
Distance between Centers	24"
Collet Capacity	1"
Taper Standard for Centers	No. 2 Morse
Tailstock Spindle Travel	3 1/4"
Tool Shank Section	3/8" x 3/4"

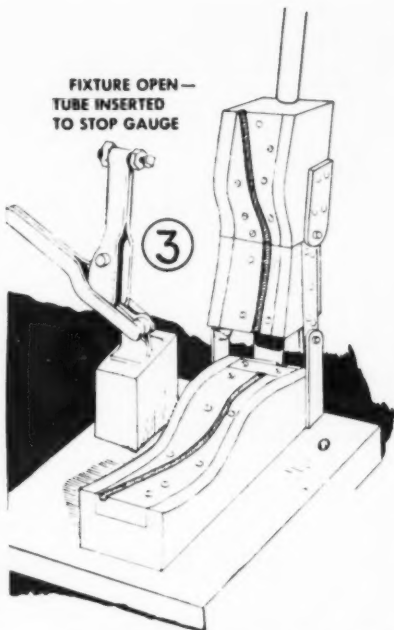


When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK



Other tooling developments in the recently-rejuvenated western aircraft industry include the tube-bending fixture shown in figure 3. It comprises a pair of contoured dies, grooved and hinged so that they can be clamped over light-gauge tubing — bending the latter to intricate shapes with more speed and accuracy than could normally be expected.

At Hercules Forge Corporation, both tooling and production costs have been reduced by means of an unusual technique for combining the advantages of drop forge and forging roll equipment in the production of articles with alternately thick-and-thin sections. Briefly, it consists of providing preliminary drop-forge dies to form rough blanks and then using secondary



drop-forge dies to forge thick section alone — leaving thin flat sections to be roll forged without special tooling. Resultant articles are rapidly finished by press trimming, sand blasting, sharpening, and grinding as necessary; and the consequent savings in time and materials are said to be so extensive that, in attaining a recent contract to forge hoes for the Brazilian Government, Hercules officials were able to underbid the closest competitor by more than 50 per cent.

MICRO-MINIATURES...

Small END MILLS AND ROUTER BITS

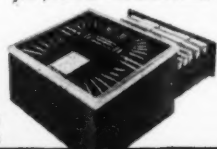
Ground from SOLID. Made to do a NEW job of milling and routing at high speed and fast feed on production runs as well as in the tool room.

THE SECRET

of their durability and long life lies in our method of grinding which produces a smooth, unbroken cutting edge. No saw tooth edge to load-up and break-down.



See the display of Micro-Minatures at your jobbers or write us for details.



WOODSON TOOL CO., Inc. • 4811 1/2 LENNOX BLVD. • INGLEWOOD, CALIFORNIA

SUPER STANDARDS

Carbide Tipped

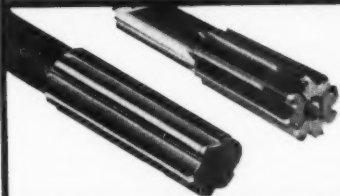


MILLING CUTTERS

For side, shell, face,
and end milling

TWIST DRILLS

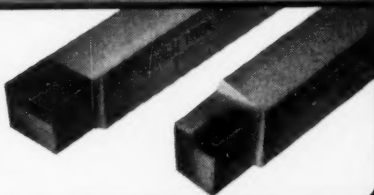
standard and
fast spiral types



REAMERS

chucking, expansion,
jobbers', and shell types

Turning Boring Facing TOOLS



Substantial stocks of above tools, plus Carbide Tipped Counterbores, Saws, Core Drills, Ejector Type Tools, etc., on hand ready for prompt shipments.

Many of your special jobs can be served quickly by altering one of the above standard Super tools. A new catalog ready soon.

SUPER TOOL COMPANY

21650 Hoover Rd. Detroit 13 Michigan

5710 San Fernando Rd. Glendale 3 California

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

109

Aluminum, steel, brass, and related sheet materials are being drawn to more than twice the depths that could normally be anticipated in single-stage die operations at Zierold Manufacturing Co., Burbank, Calif., by means of a new-type lubricant which virtually eliminates workhardening frictional stresses metallic sheets and the surfaces of steel draw dies. The lubricant is a non-commercial development of Herman A. Zierold, and has been described as a petroleum-base compound with more viscosity than ordinary sheet lubricants. It is applied to both sides of material blanks prior to drawing with dies installed in a 150-ton all steel press, and has permitted annealed aluminum alloys to be drawn to nine-inch depths (whereas four or five inches would normally be considered the maximum depth for equivalent one-stage die operations). Effectiveness of the lubricational film is indicated by the fact that drawn articles frequently reveal no traces of die marks after they are degreased, figure 4.



• • •



By adapting a 1500-ton press to work of hobbing steel die cavities, the firm of Reinhold & Geiger has achieved extensive economies in the manufacture of special tools for die casting work. As indicated in figure 5, the press is used in a more or less conventional manner to ram-impress a hardened steel pattern into the blank face of an annealed civity block. Cavities are thus duplicated in rapid succession, eliminating long hours of boring and milling; and, because of the unprecedented amount of hobbing power that is made available by the reconverted hydraulic press, dies of maximum dimensions can be produced from the best grades of annealable steel.

• • •



USE

S.S. WHITE flexible shafts and S.S. WHITE *brains*, too!

For over 70 years these brains have been studying and planning how to make flexible shafts better, smoother running, longer lasting. They have worked out a wide range of successful applications. They have accumulated a vast knowledge of flexible shafts and experience as to what they can and can't do.

The point is—these brains are ready to

work for you on any problem dealing with the application of flexible shafts for power drives or remote control. They can save you time and trouble because, in all possibility, they already have the answer to your problem. They may help you reach a more satisfactory answer, because the application of flexible shafts to all kinds of requirements is their special business.

SEND FOR FLEXIBLE SHAFT HANDBOOK

260 pages of technical information on flexible shaft selection and application. Write for it on your business letterhead.



S.S. WHITE INDUSTRIAL
THE S. S. WHITE DENTAL MFG. CO. DEPT. H, 10 EAST 40th ST., NEW YORK 16, N. Y.



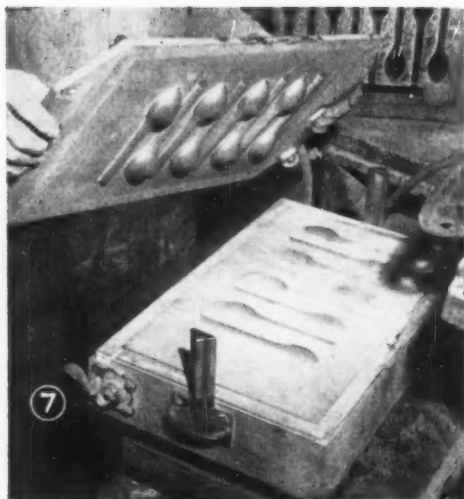
FLEXIBLE SHAFTS AND ACCESSORIES
MOLDED PLASTICS PRODUCTS—MOLDED RESISTORS

One of America's AAAA Industrial Enterprises

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

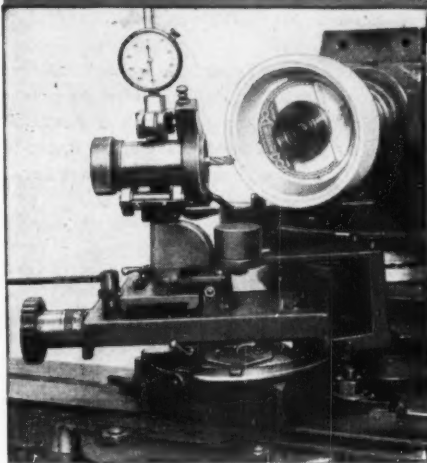
111

The problem of machining glass articles and parts within close dimensional tolerances has provided a manufacturing headache since the earliest days of civilization; but, as illustrated in figure 6, Greiner Company of Los Angeles has found a solution that seems to be practical in most cases. Hard, smooth-surfaced steel dies are used in conjunction with the motor from a conventional grinder and parts are dipped in a fine abrasive solution prior to being held on or within the dies (depending on the type of work that is being ground). Abrasive action does not affect the dies as it does the glass, but frequent die inspections are made to assure accuracy. When a die becomes exceptionally worn, it is reground and used in machining smaller dimensions.

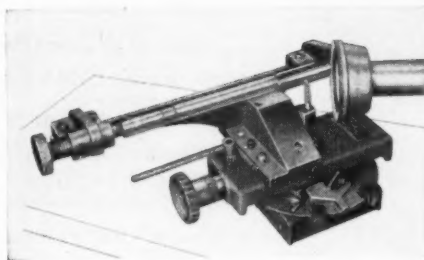


At Northrup Foundry, Inc., low-cost dies for the fabrication of rubber and plastic products are currently being made by means of a new sand-casting technique. This work reportedly involves the use of sand molds in which particles remain highly adhesive and cohesive despite even a preliminary lack of moisture, thus permitting casts with fine delineations to be made with a majority of castable alloys. Simple polishing and machining operations subsequently permit the casts to serve as dies, figure 7.

BETTER THAN ASPIRIN FOR GRINDING ROOM HEADACHES!



PATENT PENDING



Model R Radiform, in use, generating radii on Carbide Tipped Reamer within .0002 uniformity.

The Radi-Form is a small grinder attachment—the secret of which is that IT CAN MOVE THE WORK IN A PREDETERMINED ARC OF ANY DESIRED RADIUS. (From 1/16 to 2" concave, and from .00 to 2" convex.)

This means that you can now form spiral fluted end mills and similar rotary cutting tools to within .0005 accuracy if desired. You can generate radii on carbide tipped cutting tools WITHOUT FIRST FORMING A WHEEL. A standard cupped diamond wheel will serve for all your tricky grinding problems.

Here is unbelievable accuracy coupled with unheard of ease... cutting tool grinding made simple, quick and accurate. The Radi-Form can also, with ease and accuracy, pre-form grinding wheels for plunge grinding.

The Radi-Form grinder attachment sells for a surprisingly low price and earns its keep in a hurry. Write for literature and prices.

W. F. MEYERS COMPANY • ESTABLISHED 1888
1014 FOURTEENTH STREET • • • BEDFORD, INDIANA

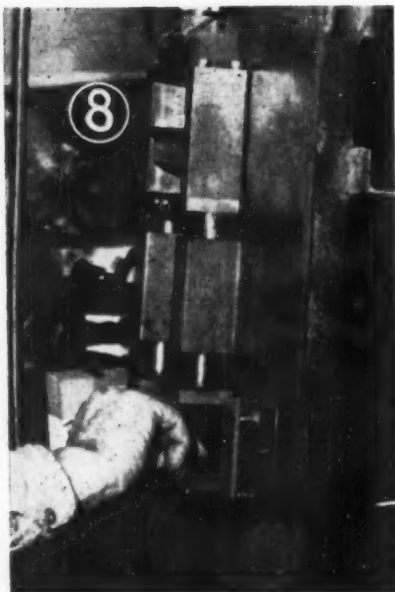
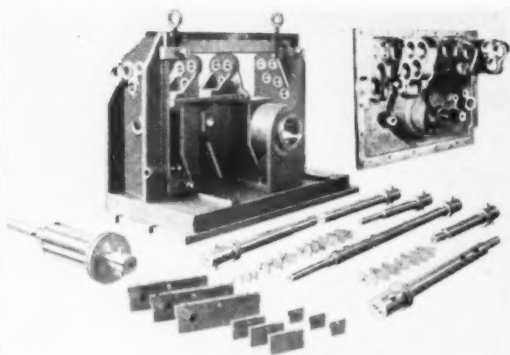


Figure 9 shows a pneumatic-die setup now used by McColpin-Christie Corporation to facilitate the assembly of thin metal rectifier parts. The parts are manually stacked on a lower die surface, adjacent to which guides are provided to prevent possible misalignments, then a pneumatic air cylinder is used to lower an upper die unit which stakes the parts together in a matter of seconds. THE END.

ARE YOU BORING GEAR CASES?



The use of
BORING FIXTURES
in conjunction with
DAVIS BLOCK TYPE
TOOLING is the only
practical answer.

Reduce your costs
and beat the trend
toward high break-
even points.



ENGINEERED BORING BY
DAVIS BORING TOOL DIVISION
OF
GIDDINGS & LEWIS MACHINE TOOL CO.
FOND DU LAC, WISCONSIN, U.S.A.

E

nthusiastic Customers do our BEST advertising

Standard Pressed Steel Co., Jenkintown, Pa., use No. 25 Grand Rapids Hydraulic Feed Surface Grinders in making the tools and dies that produce Unbrako Socket Screw Products, Flexloc Self-Locking Nuts and Hollowell Shop Equipment.



You will appreciate the micro-inch finish produced at production speeds on Grand Rapids Grinders. All Grand Rapids Hydraulic Feed Surface Grinders have these outstanding features:

1. One-piece column and base casting for vibrationless rigidity
2. Precision ball-bearing spindle which is greased for life
3. Bijur one-shot lubrication system eliminating hand oiling
4. Patented vertical movement of wheel head for quick, accurate adjustments
5. Portable coolant tank for ease of coolant replacement
6. Vane type hydraulic pump for fast longitudinal table travel

to serve you—

Your inquiry concerning your specific grinding needs will receive prompt attention. Grand Rapids Grinders include: Hydraulic Feed Surface Grinders, Universal Cutter and Tool Grinders, Hand Feed Surface Grinders, Drill Grinders, Tap Grinders, and Combination Tap and Drill Grinders.



**GALLMEYER &
LIVINGSTON**
COMPANY

GRAND RAPIDS GRINDERS

405 Straight, S. W., Grand Rapids 4, Mich.

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

115



A 5 Day Job Done in 10 Hours! PROFILE MILLING STAINLESS STEEL with GORTON and Tracer Control

This experimental short run job was done on a Gorton Profiling Pantograph with a simple, over-size master and tracer control for the Elliott Company of Jeannette, Pa.

Completely automatic tooling for a production run would save an additional 6 hours. Compare this with any other method.

This is just one example of cost saving made possible with Gorton Tracer Controlled Equipment which includes die and mold duplicators, pantograph machines, super-speed vertical mills and plain type horizontal mills. Gorton features high spindle speeds, wide versatility and high precision.

Ask for Production Estimate . . .

We will be glad to furnish a production estimate on your work — send us complete description with print — no obligation.

SEND FOR BULLETIN 1655 TODAY!

This provides information on all Gorton tracer-controlled machines.



THE JOB IN BRIEF

MATERIAL — Stainless Steel
OPERATION — Profile 20 turbine blades $\frac{1}{8}$ " deep from the solid in a circle 12.125" outside diameter.

FIXTURES — Gorton Rotary Table and 5 times-size master cut from sheet iron.

CUTTERS — 2 carbide 2-flute and 2 H.S. Steel 4-flute.

TIME — 10 hours. Finish better than 30 micro inches. Time Saving over any other method 40 hours or better.

REMARKS — Tooling for Automatic high production work. The time would be cut to 4 hours.

GEORGE GORTON MACHINE CO.
Tracer Controlled Milling

1409 RACINE STREET • RACINE, WISCONSIN, U. S. A.





Lecture No. 23
WHAT DOES THE BUYER WANT?

by

W. J. Peets, Chief Engineer
The Singer Manufacturing Co.

When a manufacturer is tooling up for a new product, or for a changed design, the machine tool salesman often becomes a part of the manufacturer's engineering staff. He acts as advisor on problems which can be solved with the type of equipment he sells. His knowledge must therefore be broad. He must be acquainted with the production problems which attend the manufacture of new products; he must know his own tools, their limitations, and their advantages.

The MACHINE and TOOL BLUE BOOK is happy to present to its readers the complete lectures delivered at the Sales Refresher Course at Cornell University, July, 1948. The course was sponsored jointly by the National Machine Tool Builders' Association and the American Machine Tool Distributors' Association. While lectures deal primarily with the selling of machine tools the fundamental sales principles can be adopted profitably by the manufacturers of general industrial products. The editors thank the NMTBA, the AMTDA and Cornell University for their cooperation in making this material available to their readers.

NEW PROVISION FOR PRECISION on multiple spindle machines



Scully-Jones Micro-Nut used on Adjustable Adapter in Multiple Spindle—Note Mark on Spindle to Facilitate Accurate Adjustment.

Graduated to permit Adjustment to within .001.

Set-Screw Does Not Touch Threads—Prevents Thread Damage.

SCULLY-JONES MICRO-NUTS*

You Make "Precision" Adjustments
Make really accurate adjustments on Multiple Spindle Machines to .001 in., by scribing a mark at any point on Spindle (see illustration) and turning easy-to-read, calibrated Scully-Jones Micro-Nut in direction required. C

KEEP INVENTORY DOWN—

Your requirements will be filled immediately from our stock of all sizes for Adapters with "Acme" and "V" threads. Write for bulletin giving further details and prices.

*Patent applied for

YOU GET LOW COST, FAST, ACCURATE PRODUCTION WITH OUR STANDARD AND SPECIAL TOOLS

You Save Set-Up Time

Simply give a quarter turn to set-screw, to lock Scully-Jones Micro-Nuts in place at any location on thread of Adapter.

For Both Types of Threaded Adapters

You can use these low-cost Micro-Nuts on present Adapters with or without set-screw slots.

Nothing to Get Out of Order

Simple, trouble-free one-piece design, with vapor blast finish. Scully-Jones Micro-Nuts are machined and hardened to meet our high quality specifications.

2847 NEDR



1907 S. Rockwell St., Chicago 8, Ill.

Our Engineering Department has the multiple responsibilities of designing our product, planning the operations, designing the plant for producing the product, and following the manufacture of that product through the factory to the field.

There are two main reasons for the purchase of additional machine tool equipment. One is to replace obsolete or inadequate machines now owned. The second is to add equipment for additional production of either new or old design. For whichever reasons these machine tools are purchased, the requirements are the same, and I believe it will serve our purpose quite well to use as an example the steps in the design of a new product which we have to take. We can then show how closely our product design and engineering are tied up with

our purchase of machine tools, and what we expect from the man who represents the machine tool builder.

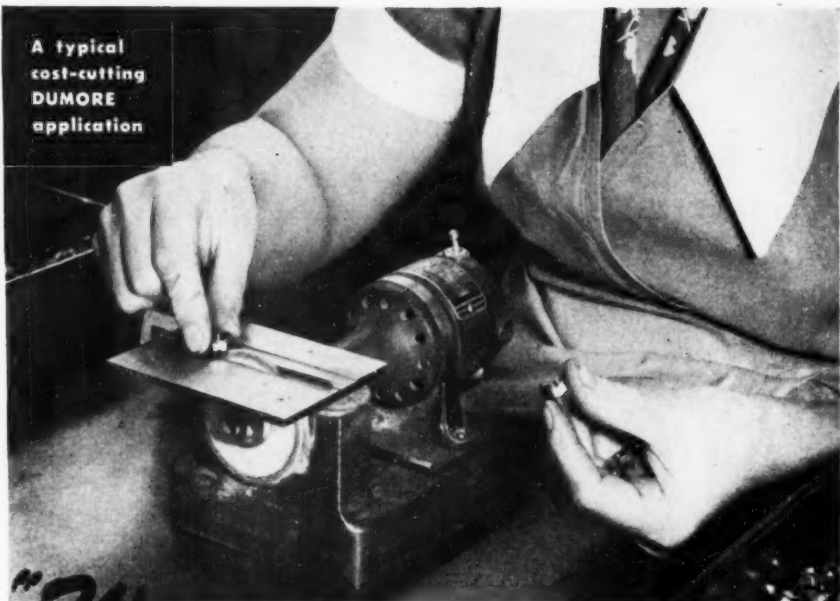
The first requirement of a new product, regardless of cost, is that it must function properly at required speed; second, it must stand up at this speed; third, it must be readily operable; fourth, it must be easily serviced with completely interchangeable parts; fifth, the cost of producing this item must be low enough so that it can be sold at a profit.

With the foregoing in mind, the actual design engineering and the engineering of the manufacturing facilities for pro-

I WILL try to approach this subject by outlining the particular problems which we encounter in our own Engineering Department, with respect to the purchase and operation of machine tools.

We are equipment builders for the sewing trade quite the same as you build for the metalworking trade. Many of our problems are quite analogous to yours. Our product is made up of a great number of metal parts machined to a high degree of accuracy and assembled and fitted so as to operate at a high speed. Therefore, machine tools are used extensively in our shops.

A typical
cost-cutting
DUMORE
application



"We can't afford thousands of dollars for special machines"

"but no production unit we've seen approaches low cost of Dumore Handgrinders!"

says C. A. Ewing, Supt. of Raush Nut & Mfg. Co., Cleveland. Using special fixture with adjustable table (cost \$50 - \$75) and mounting Dumore Series 8 or 10 handgrinder, Raush Nut deburrs up to 500 stainless steel hex nuts per unit per hour. Total cost per 100 including grinder, fixture, current, supplies and labor is less than 36¢.

"Still Own Every Dumore Ever Bought"

Raush Nut owns 30 Dumores, some as old as 15 years, uses them in tool room and maintenance, as well as production

... operated most of them 24 hrs. per day at peak production. No wonder Supt. Ewing says, "High speed and precision built into Dumore Grinders insures accuracy and trouble-free production!"

Ask your Dumore Distributor to show you, in your own shop, how Series 8 and 10 handgrinders can up your finishing output, slash your costs. Call him today or write for literature to: The DUMORE COMPANY, Dept. J-27, Racine, Wis.

DUMORE

DH-1



When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

119



CONOMATIC
1 1/2" 6-Spindle
CARRIER



CARRIER FRAME INFORMATION

Rugged

CARRIER FRAME INFORMATION

1. One piece — 615 pounds
 2. Nickel Moly Iron (normalized)
 3. Overall Length — 20"
 4. Bearing Length — 5.04"
 5. Bearing Area — 306.6 sq. in.
- (Full information available)

**ARE
YOU**

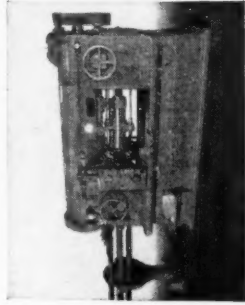
SUBJECT TO WITHHOLDING?

SUBJECT TO WITHHOLDING:

The withholding of information regarding the facilities of machine tools would be unintentional. But the use of generalizations and approximations, instead of specifications, actually is withholding. Generalizations fail to establish the superiority of a machine's facility through terms which lack a definite basis of comparison. They leave an impression of doubt as to tangible substantiation.

There is nothing definite about a "roomy" tooling area; nothing specific about a "rugged" tool slide, and nothing comparative about a "massive" frame.

The dispensing of machine information is the responsibility of the manufacturer. Realizing this, CONE has prepared an analysis chart that should prove very useful to those seeking more specific information about multiple spindle automatic bar machines. Your copy is free. There is no obligation.

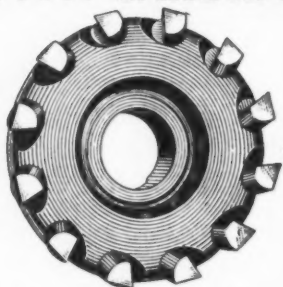


*A comparison with ALL Automatics
will lead you to*

Conomatic

CONE AUTOMATIC
MACHINE COMPANY, INC.
WINDSOR, VT., U.S.A.

MODERNIZE WITH CARBIDE



ANY OF THESE BLADES* WILL FIT ANY STANDARD LOVEJOY 4 1/2"-24" DIA. TYPE "A" CUTTER EVER BUILT

Even if you have Type "A" mills that are 30 years old, you can utilize them to full advantage with carbide tipped blades with either positive or negative rake. The housings, whether 4 1/2" to 24" in diameter, all take the same blade size. Rigid construction permits the use of only 1/2 the regular number of blades, increasing chip load with low H.P. You need no large blade inventory, but can rely on Lovejoy's large stock of tips of any standard grade. You can also use these same housings for H.S.S. or cast alloy blades.

*A single size of H.S.S. and cast alloy blades will also fit every housing size.

Lovejoy TOOL COMPANY INC.
Springfield, Vermont

ducting it should take place simultaneously and not consecutively. The problem becomes one big engineering job involving product engineering and production planning. The product engineering concerns appearance, materials, test trials, etc. The production planning involves methods, sequence of operations, special machines, jig and fixture and tool design. Together, both types of engineering must consider time study and cost.

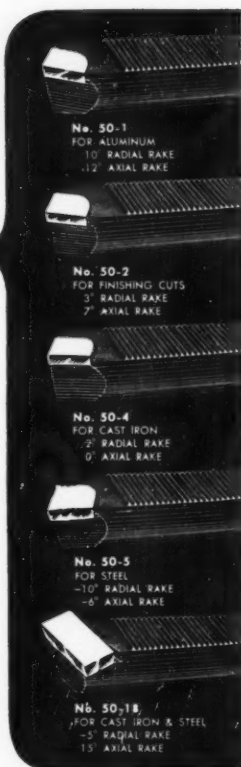
The planning of the manufacturing facilities, especially machine tools, special machinery, jigs and fixtures, tools,

the parts. It is during this long period of engineering planning that the sales engineer from the machine tool company is called upon for help. What we look for and appreciate more than anything else is the type of a man who can for the time being become a member of our engineering staff; someone who can sit down with us and give us real facts as to what his machine tool or process or material can do or cannot do.

The machine tool sales engineer has a double responsibility. He must:

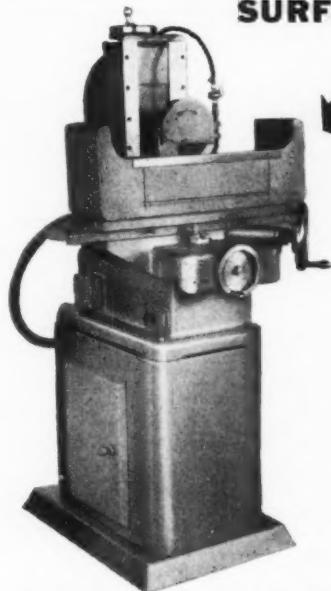
1. Represent his company in dealing with the buyer.

takes place while the new design is still on the drafting board. By the time the first models are built, methods of manufacture and tooling are well roughed out. This may be a year or more before the completion of the tests of the new models and a decision made to go ahead. What I wish to emphasize is that no step in product design can be taken without considering in detail how each part is to be made, and that brings in machine tools to no small degree. Now our products are constantly being improved. Our sewing machines have to function more precisely on an increasingly greater variety of materials. As I outlined above, they have to operate faster and more quietly, look better, and operate with less fatigue to the operator. All these requirements put an added burden on the machinery which produces



FAST - ACCURATE - ECONOMICAL!

that's the **EXCEL No. 7**
SURFACE GRINDER



PRICE

\$595.00

F.O.B. BENTON HARBOR
LESS MOTOR—PED.

Built to accurately grind tools, dies, chip breakers and for all round tool-room work, the sturdy No. 7 is also capable of handling many production jobs, freeing larger grinders for other work. You'll find this low priced grinder a really profitable investment.

BUILT-IN coolant attachment extra.

Longitudinal travel12"
Cross travel6 1/4"
Chuck Size5 3/8" x 10 3/8"
Height under 7" wheel .9"

Write Dept. MT-99 for free literature and name of nearest dealer.

DESIGNED AND MANUFACTURED BY
COVEL MANUFACTURING COMPANY
BENTON HARBOR • MICHIGAN

2. Represent the buyer in dealing with his company.

It is only when he does both of these in an adequate fashion that the best results are achieved for both parties. He will pass over such matters as financial credit, payment, discount, etc., which have to do with sales but not sales engineering, and discuss what the buyer wants from the sales engineer along purely engineering lines.

Engineering is to a great degree the accurate gathering of many facts. Most controversial issues which arise among a group of engineers disappear when all

the real facts are gathered and properly presented. Unlike other professions, an engineering opinion does not count for very much, and I am drawing a definite dividing line between opinion and judgment. Good hard facts usually decide an issue. The selection of machine tools, therefore, depends more on definite accurate information than everything else combined.

When a sales engineer is invited or invites himself to become temporarily a member of our engineering staff, it is more than likely that his product is already well known to us. Possibly, some units are already running in our shops, and the general facts, such as machine design, capacity, speeds, etc., which can be found in a machine tool catalog are at hand. In the case of general-purpose machines, such as a lathe or milling machine, it may be neces-

sary only to quote price and delivery, and be sure that the last detail of attachments, fittings, motor controls, etc., that the customer requires, is quoted on accurately. This would be the case particularly when additional units are required to supplement those already operating successfully, which is usually the result of previous thorough engineering studies. You might say the above comes under the heading of "Reaping the Reward," and should be a satisfaction both to the consumer and to the seller.

Consider the tooling of a new pro-

TAPS WON'T BREAK



with the **JAY-DEE** Tapping Attachment

Jay-Dee employs an entirely new clutch principle, designed specifically to eliminate tap breakage. Instead of using coiled springs to provide driving pressure, it has a resilient material . . . 150 times more effective than steel . . . to produce safe torques at all times. This new attachment is simple as well as safe; definite torque settings for given tap sizes and taps can be changed in a few seconds without wrenches.

Can be used for horizontal or vertical tapping, stud driving, blind or through holes—on all reversible machines.

LARGE TAP RANGE

K-1 unit handles taps $\frac{1}{8}$ "- $1\frac{1}{4}$ " USS, a range normally requiring three attachments. Other units also available.

Guaranteed for 12 Months!



Bulletin with full details.
Yours for the asking.

THE Wickman
MANUFACTURING CO.

15533
WOODROW WILSON AVE.
DETROIT 3, MICHIGAN

duct, however. Let us concede that tests have proved that it is satisfactory to our customers and fulfills all the requirements that our trade needs. It now remains to build it in the machine tool plant

1. to the necessary close tolerances so that it operates satisfactorily.
2. in sufficient volume to satisfy sales.
3. for a price.
4. on machine tools which, in addition to speed and accuracy, are safe to operate, require the least physical exertion on the operator's part, require a minimum of operator time per working cycle,

have to be fitted or selected to maintain the above requirements of oil film because the additional loose and tight fits resulting from the machining limits of the mating parts made on existing machine tools are too great to live with.

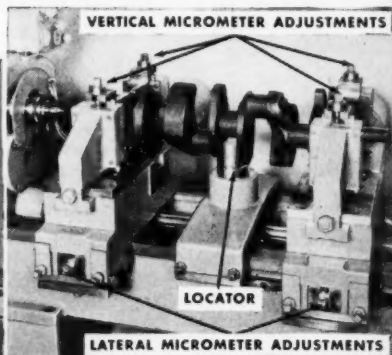
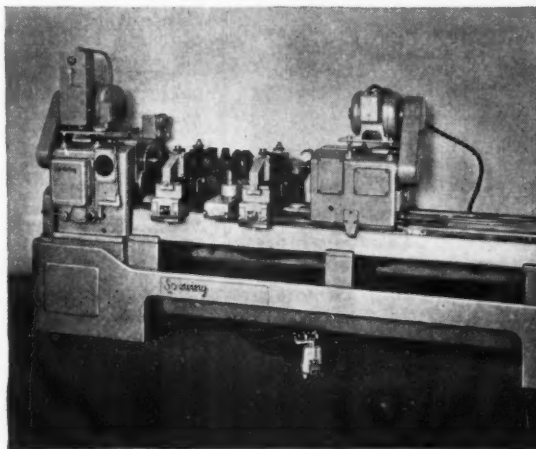
During my lifetime, I have seen a truly remarkable development in machine tools, both from the point of accuracy and capacity. However, just as it has always been, the present-day demands brought about by conditions of which we are all aware and many of which I have mentioned already are still far ahead of our machine tool capabilities.

meet a minimum of down time for adjustment tool service, repair and overhaul, and have a maximum of flexibility in the event that re-tooling is necessary in case the operation is changed.

Precision: The manufacture of precision machine parts has always been, and always will be, a matter of degree of error, and a compromise with perfection. In general, lathes, screw machines, etc., produce parts which are round to a degree, and accurate in size to a degree. Consider the matter of bearings on a high-speed industrial sewing machine. Many of these parts are reciprocating. Conceding proper lubrication and adequate bearing area, the three important things are surface finish of bearings, thickness of oil film; i.e., size of mating parts, and line-up of bearings which, of course, affects oil film. An increasingly large number of our parts

MACHINE OF THE MONTH

PREPARED BY THE SENECA FALLS MACHINE CO. "THE Lo-swing PEOPLE" SENECA FALLS, NEW YORK



Machine shown with
Coolant Guards removed
from Drilling Spindles

MODEL "CS" AUTOMATIC CENTERING MACHINE CENTERS CRANKSHAFTS IN RELATION TO CENTER OF MASS BALANCE

Problem: Center automatically various types of crankshaft forgings in relation to center of mass balance.

Solution: The Model "CS" Automatic Drilling and Centering Machine selected for this job was equipped with special air operated vises having cross and vertical micrometer adjustment for the clamping jaws.

In operation, the first crankshaft forging of the lot is centered with all jaw adjustment dials set at zero. A crankshaft is then centered and tested for mass balance in a balancing machine, after which fine adjustments are made on the vise jaws. The machine is then ready to proceed with the centering operations on the run

of a particular type of crankshaft.

Referring to the close-up view of the vises, note that each of the four jaws has independent vertical micrometer adjustment, while the cross or lateral adjustment is made with a single micrometer adjusting screw which operates the cross slide fitted to the body of the vise.

Located between the vises is a spring-operated locator which positions the crankshaft and maintains accurate depth of centering in relation to cheeks of one of the line bearings.

Engineered jobs are our specialty, and our staff is at your disposal to assist in solving your problems.

SENECA FALLS MACHINE CO., SENECA FALLS, N. Y.

PRODUCTION COSTS ARE LOWER WITH Lo-swing

Figure It Yourself!

Rotabins reduce storage space

Conventional
Shelving
Floor Layout:

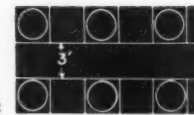


$\frac{3}{4}$ sq. ft. for storage and
1 sq. ft. for aisles

Rotabins also save time . . .

- less time walking
- less time looking
- . . . less breakage
- less loss

Rotabin
Floor Layout:



2 sq. ft. for storage and
1 sq. ft. for aisles



➔ Let F-G-M engineers help you plan most profitable layout. Send for Catalog 106-A.

Frick-Gallagher Mfg. Co.
406 Shubert Bldg.
Phila. 2, Pa.



The last war was fought with machine tools and precision gauges, and the next one will be even more so. We should never get the idea that our machine tools and processes are good enough. Any one who makes that mistake will soon be trying to compete with someone who has something better.

When manufacturing tolerances are put on a drawing, they do not represent the degree of perfection desired, but rather that obtainable from available machine tools.

Volume: Production estimates usually are included in a machine tool quotation. No doubt most production estimates are

carefully made by the factory engineers, but are quite often based on data taken from short trial runs and usually do not sufficiently take into account cutting tool life. In the case of semi-automatic machines which have elaborate tool set-up, the difference between possible production output over short periods and economical production output over longer periods is considerable.

Unless the buyer discounts the quoted production figures, the sales engineer is likely to be left holding the bag when the machine tool is put into operation.

For a price: The cost of operating machine tools involves so many factors that to discuss them thoroughly would open up the whole subject of machine tool design and operation. It seems to me that the machine tool factories have to rely to a large extent on the field reports sent in by the sales engineers to keep

them up to date.

Factory tests are too often run on new machines, operated by skilled mechanics, and supervised by the engineer responsible for the design. Such a test rarely duplicates field conditions where the operator is interested mainly in so many pieces per hour and where the motherly engineer is not present. Such items as piling up of chips, change of dimensions due to warming up of machine, awkward fixture-operation, poorly placed and protected electrical control boxes, occasional malfunction causing expensive smash-ups, are only a few typical troubles which are hard to visualize in a labora-

* Fluid Power Improves Production

"LOGAN" AIR CYLINDERS

STANDARD AND HEAVY-DUTY MILL-TYPE

LOGAN FEATURES
THAT ASSURE PEAK
PERFORMANCE AND
LONG LIFE...

- Larger ports for quicker response.
- More sturdy construction.
- Standard models available with or without cushioning.

7 STANDARD MOUNTING TYPES

Standard sizes from 1½" to 12" bore; maximum stroke, 18 feet.

Special to meet your requirements.

* ENGINEERING COUNSEL

Consult our engineers.

No obligation.

Logan

Air and Hydraulic Equipment

LOGANSPOUT MACHINE CO., INC.

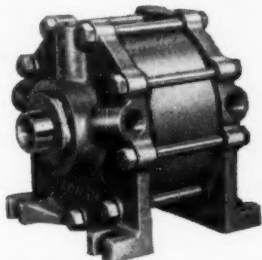
807 Center Ave.
Logansport, Ind.

CHUCKS • CYLINDERS • VALVES • PRESSES • SURE-FLOW COOLANT PUMPS

SAVES

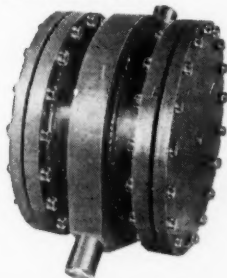
* TIME
* EFFORT
* MOTION

Fast-Acting, Positive Controlled
Power . . . At Low Cost



LOGAN STANDARD
AIR CYLINDERS

Replace most manual operations . . .
eliminate human error.



LOGAN HEAVY-DUTY MILL-
TYPE AIR CYLINDERS

For steel mill or aluminum extrusion mill,
foundry and heavy-duty service.

FREE CATALOG

Get your free copy of catalog containing complete information on Logan air cylinders, control valves and air accessories.



FLUID POWER SPECIALISTS SINCE 1916

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

Only HYPREZ can do a Hyprez Job!

IN FINISHING DIES, MOLDS, TOOLS, GAGES, PARTS

On thousands of jobs, difficult and simple, HYPREZ DIAMOND COMPOUNDS have demonstrated their quality, uniformity, speed and economy. Twenty-six engineered standards perfected by our laboratories offer you the exact grades for a complete and perfect job—from rough finish to mirror polish.

Write For This Free Folder



Illustrating proven Hyprez techniques. HYPREZ DIAMOND COMPOUNDS are available in 30, 18, and 5-gram cartridges—fully color-identified and dust proof—for use with the original Hyprez Applicator Gun.

For this folder or for a demonstration, write to Dept. B-949



HYPREZ DIAMOND COMPOUNDS

AN EXCLUSIVE PRODUCT OF

HYPREZ DIVISION

ENGIS EQUIPMENT CO., 431 SOUTH DEARBORN ST. CHICAGO

tory, but which soon develop in the buyer's shop.

The tooling of a new product (or re-tooling of an existing product) is a definite challenge to the engineers involved. It is not sufficient to machine this new part as well as you are now doing or as well as your competitor is doing. Unless on the whole you do better, you are on your way out. Further, the tooling up of a new product involves a different problem and challenge for each part involved, and each operation on that part. It is not only necessary to select

the proper machine tools, but to adapt that particular machine tool to the job. This usually requires special fixtures, fittings, etc., and many times it involves changes in the machine tool itself. It sometimes leads to an entirely new design. All this boils down to one thing—engineering. The sales engineer may not be a machine tool designer (although I know many who are), but he should be enough of an expert in his line to at least visualize the consumer's problem and be able to carry back to his company those problems in detail, and, if necessary, get an engineer from his company on the job.

The extent of a sales engineer's knowledge is evident before he is in the buyer's office but a few minutes. The engineers with whom he is surrounded are subjecting him to all the tests that he is supposed to subject them to. A group of engineers

trained to challenge every statement and discuss every point involved in detail. In our organization, it seems to be general practice that when a statement is made on any subject, about half of those around the conference table take the opposite side. I think many times this is done from pure cussedness, but it always serves to bring out the facts and is surely one way to come to a safe decision. The judgement of a group of qualified men who are all in accord after fully considering the facts will strengthen a decision to go ahead. If they are not in full accord, it will act as a caution signal

it's 1-2-3-!



1

Check your Danly catalog.
Select the standard die set
that meets your requirements from
the almost unlimited range of types and
sizes available for prompt shipment.



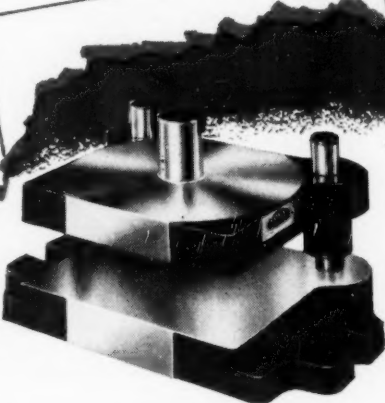
2

Phone or wire your
nearest Danly branch. A
nation-wide system of assembly
branches in major tool and die
centers is at your service. Choose the one
most convenient to you from the list below.



3

Your standard Danly Die
Set is on the way—promptly!
All Danly assembly branches
are completely stocked with
all standard die set parts. The
set you want is assembled and shipped
immediately upon receipt of your order.



WHICH DANLY BRANCH IS CLOSEST TO YOU?

*Chicago 50, 2100 South 52nd Avenue *Cleveland 14, 1550 East 33rd Street *Dayton 2,
990 East Monument Avenue *Detroit 16, 1549 Temple Avenue *Grand Rapids
113 Michigan Street, N.W. *Long Island City 1, 47-28 37th Street *Los Angeles 54,
Ducommun Metals & Supply Co., 4890 South Alameda Milwaukee 2, 111 East
Wisconsin Avenue Philadelphia 44, 18 West Cheltenham Avenue
*Rochester 4, 16 Commercial Street

* indicates complete stocks



See how Danly's special die set machining service
can reduce your costs...write for this free bulletin



PRECISION DIE SETS...standard and special

DANLY MACHINE SPECIALTIES, INC.

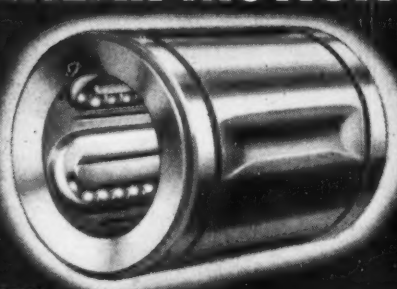
2100 South 52nd Avenue, Chicago 50, Illinois

OVER 25 YEARS OF DEPENDABLE SERVICE TO THE STAMPING INDUSTRY



Announcing A New LOW COST Ball Bearing for You

LINEAR MOTIONS



THE
COMMERCIAL
GRADE
SERIES B

BALL BUSHING

Sliding linear motions are nearly always troublesome. Thousands of progressive engineers have solved this problem by application of the Precision Series A Ball Bushing.

The low-cost Commercial Grade Series B bearing is now added to the Ball Bushing line and offered to original equipment manufacturers. This ball bearing has been developed for support of linear motions in competitively priced, volume produced products where super precision is not essential. Alert designers can now make tremendous improvements in their products by using Ball Bushings on guide rods, reciprocating shafts, push-pull actions, or for support of any mechanism that is moved or shifted in a straight line.

Competition is returning. Up-to-date engineering can be important to you!

LOW FRICTION • ELIMINATE BINDING AND
CHATTER • SOLVES SLIDING LUBRICATION PROBLEMS •
LASTING ALIGNMENT • LOW MAINTENANCE • LONG LIFE

Dept. C THOMSON INDUSTRIES, INC., MANHASSET NEW YORK

PROGRESSIVE MANUFACTURERS USE BALL BUSHINGS - A MAJOR IMPROVEMENT AT A MINOR COST

NEW 1½" NOW AVAILABLE
Now in production for ½", ¾", 1" and 1½" shaft diameters. If you have a machine or write us for new complete literature and the name of our representative in your city.

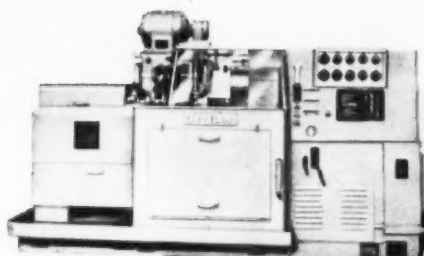
he is positive. A man who is not afraid to admit that something is impossible will in the end build up the confidence of other engineers. The effect of wrong engineering data, whether based on ignorance or deliberate falsehood, is about the same. Suppose now that the sales engineer has the required knowledge of his product. He does not have to approach the buyer in any inferior capacity. He soon becomes just as important to the engineers buying his products as they are to him. He is welcome and respected. This type of friendly respect is all-important. If the information he brings sells a machine, all well and good. If not, he is still welcome the next time.

A qualified machine tool sales engineer is fortunate in another respect. He is with almost no exception selling the product of a very high type of business concern. It is only fair to pay tribute to

and often prevent costly mistakes. A sales engineer, therefore, instead of trying to analyze one man, may have to cope with a number of experienced engineers, and if their analysis of him and the way he presents his product is not satisfactory, it may lead to the selection of some other product or the going over the salesman's head and asking his company to send a more qualified man.

There are three possible answers to an engineering problem — "Yes," "No," "I don't know but will find out." The pure salesman is inclined to say "Yes" right off, and leave the details to the boys back home. A qualified sales engineer, however, will only say "Yes" or "No" when

the high level of engineering and business ethics encountered when buying machine tools. When a quotation is received, the buyer can rest assured that he is being quoted the lowest price obtained from anyone. That the terms of the quotation will be lived up to and that high quality workmanship and good design will be used, may be taken for granted without elaborate contracts and specifications. If mistakes are made in engineering judgement, it can often be traced to a misconception of the customer's requirements, and it is certainly the responsibility of both the buyer and the sales engineer to present properly these requirements in the greatest detail.



all kinds of parts ... from
a variety of materials ...
fast, accurate, at low cost

with the new **DIALMATIC
CLEVELAND**

Model AB 2½" Single Spindle Automatic



ADJUSTING SCREW
Close tolerances. From
SAE 5120 hot rolled
steel.



**ALUMINUM CAMERA
PART** Exceptionally
good finish and close
tolerances held.



GEAR BLANK High
production part from
SAE 1050 cold rolled
steel.



SPOOL Formed from
free machining brass.



REDUCING BUSHING
From SAE 1112 cold
rolled steel. Commer-
cial thread tolerances
closely held.



SHOULDER BEARING
From free machining
brass. Fine finish im-
portant.



DIE CASTING INSERT
Requires exception-
ally good finish. From
SAE 1112 cold rolled
steel.

SHOWN here are a few samples of *profitable* production being turned out by prominent, cost-conscious manufacturers on new Dialmatic Clevelands.

The Model AB Dialmatic Cleveland is fast and accurate, rigid and powerful. Just consider this: Here, in one machine having a 2½" bar capacity, is a spindle speed range that permits you to thread 2½" diam. alloy steel down as low as 16 sfm—or work ⅞" free machining brass at 416 sfm! 112 spindle speed selections are available.

And set-up time is *short!* Electric Feed Drive operates all five turret tools (a 6-hole turret is supplied when required). Forward and return turret tool feeds are simply set by positioning dials on the control panel. Double cross slides operate by standard cams mounted on adjustable drums.

More versatile than any other automatic, the Model AB Cleveland is quickly and easily converted to a chucker—ideal for shops having an occasional chucking job to run in addition to their bar work.

Why don't you find out *now* if the new Dialmatic Cleveland can cut the cost of your production? Ask Camco engineers to submit a direct proposal with production estimates on your work. For complete machine specifications, write for bulletins.

The Cleveland Automatic Machine Co. manufactures and stocks a complete line of **STANDARD TOOLING** and COLLETS for use with Cleveland Automatics. Prompt deliveries. Write for complete information.



Remember, *Clevelands Cut Costs*

THE CLEVELAND AUTOMATIC MACHINE COMPANY

4934 Beech Street
Cincinnati 12, Ohio

SALES OFFICES: CHICAGO
CLEVELAND • DETROIT
HARTFORD • NEWARK

Manufacturers of a Complete Line of Single Spindle Automatic Screw Machines and High Pressure Hydraulic Die Casting Machines

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

131

After the order for a machine is placed, the buyer still likes to consider the sales engineer as his representative. He expects delivery promises to be followed up, and when the delivery is made, looks to him to arrange any necessary service or to correct any oversight or error.

After the machine tool is successfully operating, an occasional phone call or visit and personal inspection are usually quite welcome.

It must be quite evident by this time that I have treated buyers' wants pretty much from the engineering angle. The buyer does want such engineering help

from the sales engineer.

The engineers buying machine tools must justify to their management the money to be spent for these tools, and must get the product out of them after they are purchased and in operation. The sales engineer is not selling machinery, he is selling production of this machinery, and I do not believe that I have stressed the engineering aspect too strongly.

I am not going to discuss at any length courtesy, personality, good judgement in human relations, etc. The lack of good manners is regrettable whether in the buyer's or the seller's organization, and the penalties in either case are equally severe.

I hope that I do not leave with you the impression that this is an indictment of machine tool sales engineers.

Daily in planning our product design and production tools we do sit down with sales engineers representing not only machine tools, but materials and services of all kinds. We consider the experience, knowledge, and judgement of these engineers as a vital part of our engineering procedure, and fully appreciate their help and friendly advice.

Such cooperation and advice cannot be safely ignored by the buyer or fail to be available from the seller.

In signing a purchase order for a machine tool, three main thoughts are uppermost in the buyer's mind:

1. Will the machine tool do the operation for which it is being purchased, and is it the most suitable machine offered?

This is not a matter of guarantee by the machine tool builder, but the result of careful engineering and, if necessary, exhaustive test runs to prove any doubtful point. This should leave little doubt in the buyer's mind as to the results to be expected.

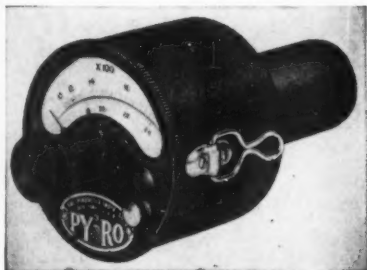
2. Is the purchase a good investment for the buyer's company?
3. Is the company selling the machine tool responsible, and will it promptly rectify any faults which develop after delivery?

Here again, this is not a matter of written guarantee or quality specification, but rather a reputation for fair dealing and sound engineering built up over the years.

If the sales engineer keeps these three points in mind and properly represents his company, he will be giving the buyer what he wants.

End of lecture No. 23.

Here's all you need to tell spot temperature instantly!



Just sight it . . . and press the button!

PYRO RADIATION PYROMETER

Determines spot temperatures of heat-treating furnaces, fire boxes, kilns and forgings accurately—Instantly. No thermocouples, lead wires or accessories needed. Temperature is recorded on direct-reading dial at press of button. Any operator can use it. Two double ranges for all plant and lab. needs.

Write for FREE Catalog No. 100

The PYROMETER INSTRUMENT CO.
New Plant and Lab., Bergenfield 3, N. J.

STAMPINGS
IN SMALL LOTS
DAYTON ROGERS
Manufacturing Company
Minneapolis 7, Minn.

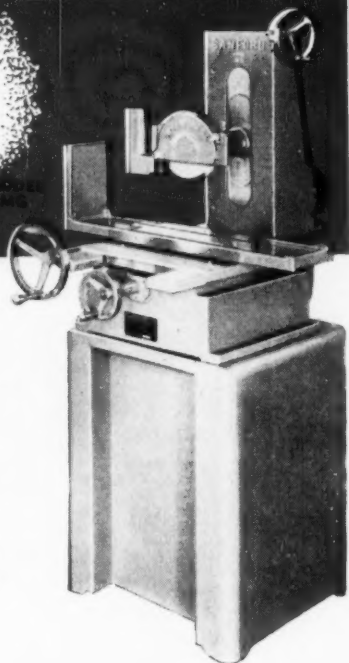
SANFORD

surface grinders

Exceptionally sturdy, outstanding in quality performance and of long lasting accuracy.

Handles wide range of Tool and Production jobs, form and crush grinding, dry or wet.

Actual capacity: 8 $\frac{3}{4}$ " transverse 13" longitudinal, 12" vertical under 7" dia. Wheel with adapter.



Accurate within .0001

BENCH MODEL SG

A sensitive, highly accurate machine specially designed "for the job that fits in your palm."

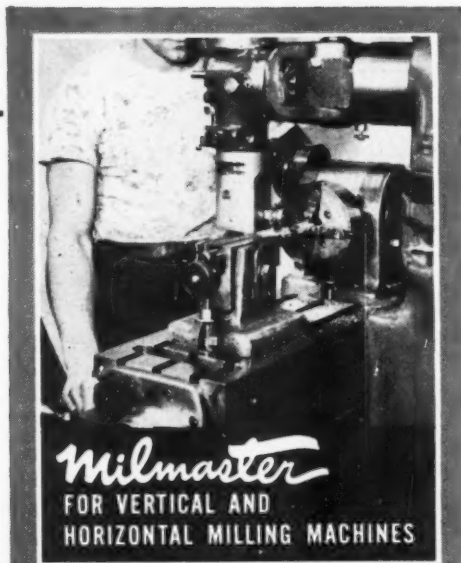
Actual movements — Transverse 4" — Longitudinal 8" — Vertical 6" (under 4" wheel).

WRITE FOR COMPLETE DETAILS

SANFORD
MANUFACTURING CO.

1020-28 COMMERCE AVE.
UNION NEW JERSEY

YOUR MILLING MACHINE CAPACITY *DOUBLED!*



Convert your milling machine...horizontal or vertical...into a universal miller and *double* your capacity. Reduce set-up time by as much as two-thirds.

Built by one of New England's oldest metal working specialists, the MILMASTER is a sturdy tool of proven value. Wherever it is used it has paid for itself in a matter of hours.

Get the facts!

MAIL TODAY

BEMIS & CALL COMPANY
100 Main Street, Springfield, Mass.

Please send me the bulletin giving the full details on the Milmaster.

Name

Company

Address

City Zone State



Lecture No. 24

THE SALES ENGINEER'S DAILY ACTIVITY

by

R. A. Vidinghoff, Vice President
Swind Machinery Company

What is involved in office procedure? How can the time spent in reporting calls, filing material, writing letters, be made effective? System and order is the foundation of office routine; "keeping the desk clean," is of utmost importance. The author, whose organization is well known for its efficient and orderly office routine answers in this article many office routine problems for the salesman.

NO ONE dislikes detail or routine work any more than I do and I am sure all of you concur in these sentiments. On the other hand, so far as the Sales Engineer is concerned, the detail and routine work required is similar in scope to the activity of a Methods and Control Department in any large manufacturing plant. Briefly stated, a successful Sales Engineer must have a plan of operation and furthermore, must have some control over these operations. The Sales

Engineer's day is divided between the amount of time spent in the office and the amount of time spent in the field and my remarks will be confined to the time spent by the Sales Engineer in the office.

In general, the time spent outside of the office is regarded as the most valuable. This is true. However, it doesn't necessarily follow that time spent in the office is totally ineffective. On the contrary, a certain amount of time spent



ACCO



**CAMPBELL MACHINE DIVISION
AMERICAN CHAIN & CABLE**

937 Connecticut Ave., Bridgeport 2, Conn.

a **NEW** ABRASIVE CUTTER at a **NEW** **LOW PRICE***

- Choice of wet or dry model.
- Capacities up to 1" solid —2" tubing.
- Cuts tubes, bar and angle stock, etc. of corrosion-resisting steels—annealed or unannealed—non-ferrous materials.

* Wet Model **\$600**
(without Electrical Equipment)

Dry Model **\$550**
(without Electrical Equipment)

SEND FOR BULLETIN DH-102C

This illustrated folder gives you complete specifications, dimensions, shipping weights and other data about this new Campbell Abrasive Cutter. Write for your copy.

CAMPBELL
Abrasive Cutters
and Nibbling Machines

his own records. Even if the salesman doesn't have to spend time on keeping these records, he should make it a point to familiarize himself with their function—so he'll know where the information is and how it is compiled. Knowing how to do this will make him more conscious of its importance and in those cases where the records depend on information supplied by him, it will make him realize the kind of information needed.

The most important thing in a sales office is an order. We have a system of handling orders that seems to be adequate and functions simply. I believe this system is used by others with minor variations. When an order is received, we immediately assign our order number to it. A folder with this order number is made up and all correspondence relating to the order, as well as the order itself, is transferred to this folder.

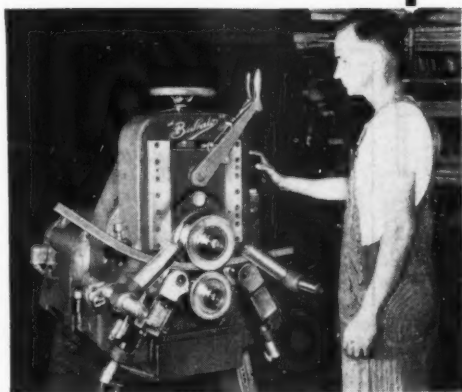
Any subsequent correspondence or service report relating to this order prior to shipment or after shipment, goes into this folder. This gives us a complete file on each order. The entire history is in one compact file. We never destroy these orders, so that many years after an order is shipped, we can go back, if need be, and get the complete record—and believe me, this is a very valuable file, as we continually refer to old order files for information. Since these records are filed by our order number, we have a cross-index whereby we list all orders on a permanent card file under the customer's

in the office can be effectively used. Let's see what is involved in office routine and analyze it briefly.

Our business, like most others, is dependent to a large extent on records: Records of inquiries, of current orders, of past orders, of general correspondence, records that contain all the details about our equipment, service reports, etc. In the larger offices, these records are usually kept by competent office personnel. The salesmen in these offices, therefore, have little or no worry about these functions. However, in smaller offices, it often behooves the salesman to set up

NO CHEAPER METHOD OF

Rolling Out Curved Shapes



than with

"Buffalo"

**BENDING
ROLLS**

Yes, you can make a production-line operation out of the once-slow job of turning out spirals, arcs, circles and special curved shapes! "Buffalo" Bending Rolls do it quickly and accurately. Little experience needed to operate them. Left, "Buffalo" OA Bender widely used in light metals industries. Large horizontal and vertical benders also available for forming larger shapes. WRITE FOR BULLETINS 352-B, and 344-A — and see how you can put real profit into your bending with these husky machines. They pay for themselves in a hurry!

"Buffalo"
BUFFALO FORGE COMPANY
161 Mortimer St. Buffalo, New York
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

DRILLING PUNCHING CUTTING SHEARING BENDING

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

137

Severance CUTTING TOOLS

MIDGET MILLS - 1/4" Shanks

GROUND-from-the-Solid



ACTUAL
SIZE



TEN LEADERS

MORE THAN 20 SHAPES—EACH IN SEVERAL SIZES

Obtain the best from the originator of
GROUND-from-the-Solid

Severance JUNIOR MILLS - 1/8" Shanks

GROUND-from-the-Solid



SET OF
TEN

Practical for use on small
grinders, for finishing
Patterns, Dies, Parts, etc.,
in places difficult to reach
with the larger Mills.



ACTUAL
SIZE

HIGH SPEED and CARBIDE

Truly REVOLUTIONARY Cutting Tools

Severance LAB MILLS - 1/32" Shanks

GROUND-FROM-THE-SOLID

These speedy Mills for Dental Labo-
ratories find many uses in Jewelry
and in Die and Mold making. Avail-
able in 10 popular shapes in 4 or
more sizes each, for the finest cutting
and finishing. May be reground up to
8 times per 1/32" reduction in diameter



ACTUAL
SIZE

Write for Catalog No. 16



HIGH SPEED
Out-Perform Dental Burs
and Grinding Points

Complete REGRINDING Service — by New Tool Craftsmen
— Savings are thus multiplied —

SEVERANCE TOOL INDUSTRIES, Inc.

722 Iowa Ave.,

Saginaw, Michigan

HIGH SPEED
CARBIDE

DEBURRING GROUP



30° 45°
INSIDE



OUTSIDE
HAND
RADIUS

TUBING GROUP



STANDARD
Chamfering
SOLID
(For Radius Lip)

COUNTERSINK GROUP



STANDARD
HEAVY
DUTY



BALL SEAT
BEAMER

time since we do not have to check through the correspondence to determine what the last promise was.

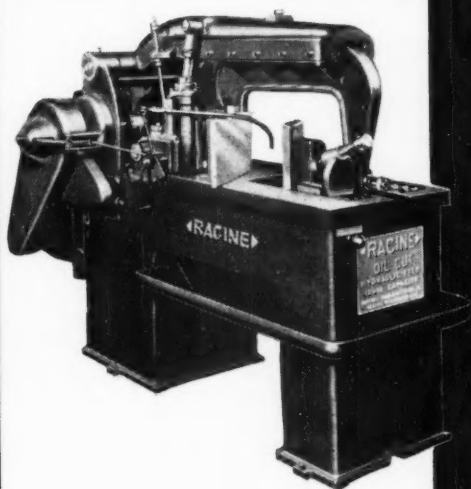
However, before we get the order, we are usually working on an inquiry. How are inquiries handled? A good many companies use a system similar to that described for handling orders. When they get an inquiry, they assign it a number and start a file on the inquiry. I personally like this idea but there are some drawbacks, the chief drawback being that there are far more inquiries than orders, and the bulk of the material to be filed becomes a problem. There is also the question as to when an inquiry is dead and what to do with the file. If your business volume is not too large, you can file inquiry correspondence with general correspondence, provided of course that a list of outstanding quotations is kept so

that something is always available to refresh your mind on these activities.

Quotations require descriptive material, such as circulars, etc. We use a rack file for all circular material. These racks contain a series of boxes, which hold about 25 to 50 circulars. On the outside of each box is a label describing the circular matter. The boxes slide out easily—the labels are always in view and the circulars are clean because the boxes are dustproof. This system has worked out much better than our previous system of keeping circular matter in filing cabinets. Another office requirement is to have a supply of repair parts and

name and show his corresponding order number with a description of the equipment. Thus we can quickly get the proper file records if we have any one of the following bits of information: our order number, customer's order number, or the customer's name and a description of the equipment. Only under special conditions are order files ever removed from the office and when they are, they are charged out to the individual.

One of the most frequent uses of an open order file is to check delivery status. We have a form on the outside of our order folders on which we insert the latest delivery information. This saves



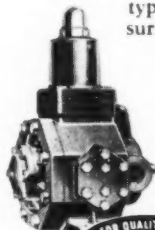
Presenting
THE
RACINE
Model 60-CX
10" x 10"
"Oil Cut"
HYDRAULIC
METAL CUTTING
MACHINE

COMPLETE HYDRAULIC OPERATION

Feed and pressure control, rapid transverse and lift on non-cutting stroke are all hydraulically controlled. This assures easy handling, proper blade application, accurate cutting and long trouble-free service.

RUGGED CONSTRUCTION

Heavy, wide table with replaceable table plates, swivel vice and three speeds are all standard. Heavy rib supported saw arm has wide "V" type gibs and large bearing surfaces for saw guide.



Racine's complete saw line includes models in all price ranges for general or automatic high speed metal cutting work. Capacities 6" x 6" to 20" x 20". Write for Racine's Complete Saw Catalog No. 12. Address RACINE TOOL AND MACHINE CO., 1754 State St., Racine, Wis.

RACINE HYDRAULICS — FOR MODERN CUSHION-LIKE POWER

Investigate RACINE'S line of oil hydraulic pumps and four-way valves. If you are planning on converting to hydraulic operation, our engineers will be glad to assist you — no obligation of course.

RACINE

Standard for Quality and Precision

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

139

Improved Tap Head Makes **TAPS LAST LONGER!**

The unique friction clutch on this new, improved, Procnier high speed tapping head practically "thinks" for the operator . . . making taps last longer, cutting production time and cost. This double-cone clutch engages the drive and reverse shells with a velvety "cushioned" action. Tap driving power is automatically regulated by the amount of pressure applied to it. "Blind" tapping is done as easily as through tapping. The operator can quickly detect dull or "loaded" taps just by the pressure needed to drive them. This increased sensitivity and smoothness results in: fewer broken taps; less operator skill needed, faster, lower cost tapping! This improved Procnier tapping head has many more time and money saving features. Write today.

Procnier
Safety Chuck Company
14 S. Clinton St. Chicago 6, Ill.

Procnier Safety Chuck Co.
14 S. Clinton St., Chicago 6, Ill.

Gentlemen:

Please send your illustrated brochures which give complete prices and specifications on Procnier High Speed Tapping Heads and Machines.

Name

Address

City Zone State



PROCNIER
"TAP SAVER"

Exclusive "Tru-Grip" tap holder, lighter, smaller in diameter, minimizes "fly-wheel" effect. It affords easier tapping close to walls or shoulders, eliminates "chewed up" tap shanks.

These files are of the card type and each card shows when the machine was shipped, customer's name and address, and our order number in case we want to get the order file out and determine the history of the machine.

It costs money to sell. You can keep these costs down by minimizing lost time in the office—and this simply means having efficient office methods, the most important of which is your filing system. You must be able to know where the information is and it must be quickly available.

Since efficiency is our goal, how else can we save time? Alexander Graham Bell has something to do with this. He gave us the telephone and most of us know how to use it—but do we use it effectively? In our company, we place every little restriction on the use of the phone—as a matter of fact, we encourage the use of the phone wherever good judgement indicates its use. Yes, we get

a big phone bill each month but let's look at the advantages. First—it cuts down on some clerical expense by eliminating certain correspondence. However, it is always understood that anything of importance should be confirmed in writing, so that a written record is always available. Nevertheless, the phone can speed up things for you. Your service to your customer is faster and when you talk to a man, you are more confident that you understand him and that he understands you. Correspondence is too often incomplete and sometimes is so written that more than one interpretation of the con-

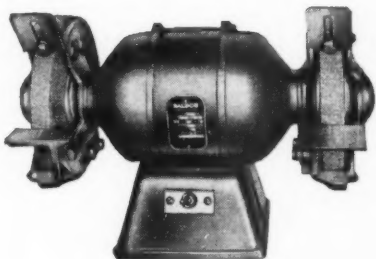
struction books. The sales office must be in a position to supply this information promptly without the necessity of contacting the factory. Prompt service when a customer makes a request is a "must" in building up and maintaining customer good-will.

Still another requirement in the office consists of a file record of machines by types of machines. Oftentimes you want to show a customer a machine and that's when this file comes into use. In this file all machines of a specified size, type, and make are grouped together.

BALDOR

BALL BEARING GRINDERS

—backed up by more than 25 years "know how" and fully guaranteed



BALDOR Grinders are built for heavy-duty, precision work and are balanced 2 ways: the motors are DYNAMICALLY balanced, the grinding wheels are equipped with PATENTED Baldor balance flanges. AT LEFT: Grinder No. 7120; ½ h.p., ball-bearing motor, two 7" wheels (36 and 60 grit). Fully adjustable tool rests. **\$60.00**

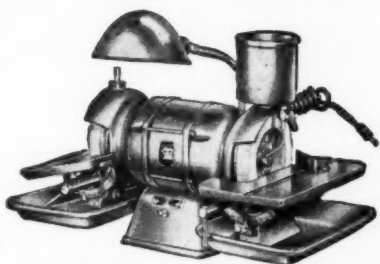
ASK FOR BULLETIN 321-D
for full information on complete line
of BALDOR Grinders and Grinder-
Buffers.

CARBIDE TOOL GRINDER

for speed and accuracy

AT RIGHT: Special BALDOR Carbide Tool Grinder, series 500; has sturdy ½ h.p. reversible, ball-bearing motor. 6" Silicon Carbide wheels, adjustable tool rest tables and other features illustrated. Guaranteed 2 years against burn-out.

\$127.20



BALDOR ELECTRIC COMPANY •

4368 DUNCAN AVE., ST. LOUIS 10, MO.

Baldor Grinders and Motors are serviced by more than 200 Authorized Dealers throughout the U. S.

Perforated SCREENS for FILTERS

**Stronger,
Easier Cleaned,
Always
Accurate
with
H & K**

- Smooth Surfaces
- Uniform in Size, Shape and Spacing
- Correct Material for Every Use

ELIMINATE GUESSWORK—choose H & K Perforated Screens for Filters. Here is precision workmanship—representing over 66 years of perforating experience. Your choice of patterns is practically limitless, with accuracy of hole size and spacing, flatness and proper selection of materials as the major considerations. Rough edges and burrs are held to a very minimum, assuring you constant protection against dirty, inefficient screens.

Perforated Metals—Stainless Steel, Monel, Inconel, Aluminum, etc., and **Perforated Non-Metals**—Plastic, Foil, Plywood, Rubber, etc.—nearly every sheet, plate or coil material—your choice is endless at H & K. Write today for complete information.

ALSO—Remember H & K for Grilles of Beauty and Distinction.

**The
Harrington & King
PERFORATING CO.**

5635 Fillmore St., Chicago 44, Illinois
114 Liberty St., New York 6, N. Y.

tents can be made. A phone call can be impressive and effective if used wisely. Some offices use the teletype system, which has obvious advantages over correspondence. First, it is faster, and secondly, it provides a written record and eliminates the need for confirmation.

I have mentioned filing correspondence and cutting down on correspondence, so let's turn to the subject of correspondence briefly. Correspondence should be courteous, brief, and to the point. It is a bad practice to try to cover more than one subject in a letter—it not only confuses the recipient but throws the filing system off. All letters that are answered should

be stamped "Answered" and the date they were answered should be noted. Sufficient copies should be made of all outgoing letters, so that there's a copy for the follow-up file, for the general correspondence file, for the order file when relating to an order, for the salesman covering the account, for the inquiry file if you keep one, and for the Sales Manager if it is a subject in which the Sales Manager is interested. If you are a distributor, factory copies of quotations and certain relevant correspondence must be made.

In some instances, we have eliminated considerable typing by using standard quotation forms where a perfectly standard machine is required. All we have to do is to fill in the customer's name, price and delivery, and the introduction. However, no matter what the correspondence relates to, never lose sight of the fact that you are judged

by the letters you write. You are a salesman and you can sell yourself to your customers by the type of letters you write. Show your customer that you are thorough; be sure your letter is complete. Let the customer know you appreciate his business; thank him for it; show him you have his interest at heart by making sure the information you give him is pertinent and, above all, don't be arbitrary or contrite. Answer letters promptly. If the information requested is not readily available, write and tell the customer it will take a little while to get the information together. Don't let the customer or factory wait



Now

PRODUCE SPECIAL TOOLS

SPIRAL OR STRAIGHT FLUTES

from other tools or from solid steel

in your shop

OTHER USES IN YOUR SHOP:

- GRIND RADIAL OR FORM RELIEF
- GRIND RADIAL AND FORM RELIEF AT ONCE
- GRIND OUT FLUTES
- GRIND FORM TOOLS WITH SPIRAL FORM RELIEF
- GRIND RELIEF ON O.D. AND FACE OF STEP TOOLS AT SAME TIME WITH .005" MAX. RADIUS IN CORNER

Also used as motor-driven headstock for grinding straight or tapered cylindrical work.

When the need comes up for a special spiral-fluted cutting tool in your shop, you can make it quickly and accurately if you have the Detroit Reamer Circularity-Grinding Attachment. Tools can be produced complete with any number of flutes up to 24 and any length . . . they can be produced from other tools or from a solid piece of steel. This attachment is also valuable for grinding relief on all cutting tools, whether straight-fluted, spiral-fluted or straight or tapered.

The Circularity-Grinding Attachment fits on any standard cylindrical or cutter grinder and is easily set up for any job. All tools produced from the same set-up are identical and set-ups can be duplicated again and again by merely resetting the scales provided on the attachment.

Think of the savings in time and money when you can produce your own "specials" in any quantity . . . easily, quickly, inexpensively.

Send for Bulletin



DETROIT REAMER & TOOL CO.

Mfrs. of Special High Speed Cutting Tools

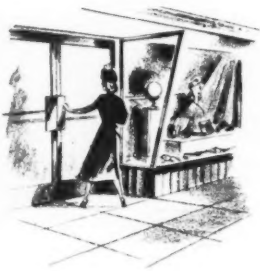
2830 East 7 Mile Rd.

Detroit 12, Michigan

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

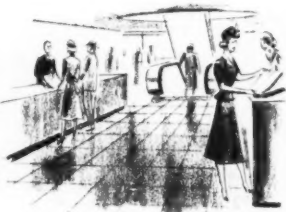
143

Shopping for Sanding Savings? ...try JEWEL ABRASIVES



The shining stainless steel used extensively in modern store construction can be finished faster, better, at less cost, with Jewel Silicon Carbide paper belts.

And the backing of rubber tile used on the floors of many stores is roughed up for better adhesion in the cementing operation with fibre-backed Jewel Silicon Carbide.



Order Jewel Coated Abrasives from your distributor, or write us if you have a special sanding problem.



Abrasive Products, Inc.

around wondering if you received his letter. We try to answer all correspondence in forty-eight hours or sooner. We feel we owe this service to our customers and to our factories. More than one order has been lost by poorly handled correspondence, so don't needlessly put obstacles in your way by ignoring correspondence.

At this point I believe it well to mention that it is also the salesman's job to keep the customer posted on current orders. Some companies, I know, have their Order Department to take care of this for their salesmen. In these cases, however, it is still necessary for the sales

man to see that the job is carried out. If this job is not done by the Order Department, the salesman should make it a point to keep customers informed on the current status of their open orders. This is part of the service you render your customer and many times, the service you render is the determining factor as to who gets the order when all other things are equal. There is no better way to antagonize a customer than to wait until the scheduled shipping date before notifying him that there has been a delay and that he must wait two or three months longer. Delays seldom occur at the last moment. If a delay is incurred, it is usually in the early stages rather than at the last moment. When a delay is incurred, notify your customer at once, so that he can plan accordingly.

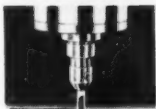
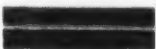
There are several more points regarding routine which should be discussed. You are all familiar with

Sales Reports or Call Reports. There are many systems of Sales Reports—some good and some bad. The system we use has worked well for many years with little change and, briefly, this is how it works. We break our Call Reports down, using two separate forms. The first form is called the "Daily Report." This is filled out daily by each salesman and on this form the salesman merely lists by numbers consecutively, from 1 up. If there is anything to report, he merely indicates at the bottom of the sheet the corresponding number and states "See Sales Report." This Sales Report is the second form we use. On this Sales Report,

NELCO Carbide-Tipped 3 FLUTE END MILL

did this job in $\frac{1}{6}$ th the Time

New NELCO 3 FLUTE CARBIDE-TIPPED END MILL



- Plunges into solid metal and mills. Will bore hole and mill in one operation.

- Eliminates Chatter — providing smoother cutting — a better job in astonishingly reduced time.

- Mills so smoothly that a finished cut is either not required at all, or to a much lesser degree.

- Stays sharp much longer—doesn't require resharping as often.

- Provides Cooler and Freer Milling — More CHIP room decreases the chance of work over-heating and twisting.

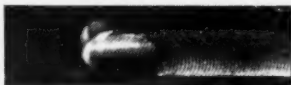
This tool is manufactured for use on all types of alloy steel, cast iron, brass and bronze. Size ranging from $\frac{1}{8}$ " to 2" diameter.

and did it Better!

One of the objective tests used by Nelco Engineers was the cutting of a "keyway". (Results illustrated below) End Mills compared were high-speed steel and Nelco's new Carbide-tipped 3 FLUTE. Material was S.A.E. 1095 steel shafting. End Mills were $\frac{1}{2}$ " diameter; a 3 H.P. milling machine was used in both cases: 2400 R.P.M. and 14" per minute feed was used for the Carbide: 609 R.P.M. and 3" per minute feed for the high-speed steel.

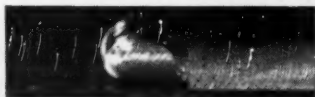
OPERATIONAL RESULTS:

2 MINUTES — To complete the job using high-speed steel end mill.



NOW COMPARE NELCO RESULT!

20 SECONDS — Job completed using Nelco's new Carbide-tipped 3 Flute End Mill!



NOTE: ABOVE TEST PHOTOS UNRETOUCHED



SAVE hundreds of valuable production hours by giving the Nelco Field Engineer a few minutes of your time! Let him show you how Nelco Carbide-tipped Milling Cutters, End Mills and Twist Drills are lowering production costs for others.

Write for
address of your
Nelco Field Engineer

NELCO TOOLS

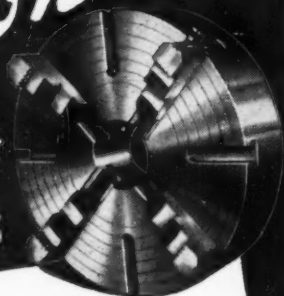
For that extra edge in production

NELCO TOOL CO., INC., Manchester, Conn.

Whiton

INDEPENDENT LATHE CHUCKS

All types of mountings



Feature

Gives Jaws "Steel Finger" Action

- Tighter Gripping
- More Rigidity
- Greater Accuracy
- Even Distribution of Pressure



Try it yourself. Pick up a piece of work in your fingers. That's ordinary holding. Now squeeze . . . that's Whiton Multi-Thrust "Steel Finger" action.

Work Holding Problems?
Write Whiton
Ask for catalog, too.



Makers of Fine Chucks • Steam Turbines
Centering Machines • Gear Cutting Machines
THE WHITON MACHINE COMPANY
NEW LONDON, CONN.

can check the calls against the mailing list for that territory and maintain a check as to the frequency of calls made on each customer. This is one of the controls used to assure proper coverage and there is no guesswork. The Sales Report can then be attended to and after it has been taken care of, be filed with the order file, if it relates to an order—the inquiry file if it relates to an inquiry—or the general correspondence file if it relates to an inquiry—or the general correspondence file if it is of a general nature. If the Sales Report contains a request for quotation a "Quotation Request" form can be used in place of the Sales Report. A Quotation Request form saves time and makes sure that all information needed to quote intelligently is available.

When a salesman handles a service job, he should make out a Service Report. In our office, these firms

are filled out in triplicate; one copy for the factory, one for the salesman, and one for the order record file. Thus the factory has a record of all adjustments made, and your own order record file, containing the complete history of each machine order, is complete, even to the record of servicing.

If reports are handled in this way or by a similar method, it makes it easy for the salesman to maintain his mailing list. Each salesman should have a copy of the mailing list for his territory on his desk at all times. When he makes out his report, it is a simple matter to check the companies and individuals called on a-

the salesman lists the customer's name, complete address, and the names of the individuals he talked to, and then writes out just information he wants or whatever he wishes to report. It is of utmost importance that on both the Daily Report and the Sales Report the individuals called on should be clearly identified by their initials, correct spelling of their names, and titles. We file the Daily Reports in a separate file for each salesman. This Daily Report file then becomes a permanent record that indicates quickly to the salesman and Sales Manager just what calls were made and when. The salesman, or someone in the office,

**NEW!!
NEW!!**



R AND L TURRET BACK REST HOLDER

For use on R and L Turning Tools. Simple design allows for convenient Interchanging of the R and L carbide surfaced or Roller Backrest (above) and the R and L Burnishing Backrest shown below. Built in sizes to fit all R and L Turning Tools.



R and L Tools Changed in Ten Seconds for Right or Left Hand Turning.

Manufacturers of Precision Tools for Screw Machines.

Also Turning Tools . . . Roller Backrests . . . Carbide Backrests . . . Top and Die Holders . . . Universal Tool Posts.

This

**TURNING
TOOL...
Replaces
14 TOOLS**

Can be changed from
RIGHT to LEFT
. . . in 10 Seconds

Write for Literature

R AND L TOOLS

1825 BRISTOL ST., NICETOWN, PHILADELPHIA 40, PA.

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

147



Automatic DRESSOMETER DIAMOND ACTUATOR

rotates diamond tool
22½ deg. with each complete pass
across wheel face, maintaining most effective
cutting edge and constantly sharp diamond.
Adaptable to all grinders. Simple to install.
Longer diamond life and more pieces
per dressing guaranteed.
Write for catalog.

J. K. SMIT & SONS, INC.

Gen'l Offices & Plant: MURRAY HILL, N. J.
6400 Tireman Ave., Detroit 4, Mich.
In Canada: 129 Adelaide St. West, Toronto, Ont.

against this mailing list and make whatever corrections or additions may be needed. The importance of a mailing list cannot be over-emphasized; it is the stock in trade of every salesman. Needless to say, a mailing list, to be effective, must be up to date. There are frequent personnel changes and these changes must be promptly noted if you are to maintain full coverage of your assigned territory. Keeping your mailing list handy and getting into the habit of keeping it up to date takes only a few minutes a day and it will serve you well, in addition to saving you time later on.

When a salesman leaves the office, he

should always leave a list of intended calls, so that the office can reach him promptly if need be.

All of what has been said so far relates to the salesman's routine office work. If the routine is once established, it will be easy to follow, and above all, it will "Keep that desk clean," which after all is the quickest way to spot a good salesman.

As a salesman, you are accustomed to calling on customers. However, there are times when customers call on you. That's another reason why it's important to "keep that desk clean," so your visitors will be impressed by your orderliness. It's always wise to have efficient office methods. You want your visitor to realize that his order and his correspondence are handled in a business fashion. It builds up his confidence in you, which is the first thing any good salesman wants.

Don't keep the customer waiting when he calls on you. You know how it feels to wait around to see a customer. After all, the customer considers himself a mighty important person, and rightfully so. Your business depends upon him but he does not necessarily depend on you. When he calls on you, see him promptly. When possible, introduce him to the executives and other individuals of your company, so he can see what a fine organization you have. Take advantage of his visit and show him things he is too busy to look over when you see him at his office. Show him just how his orders and inquiries are handled, so that he will leave with a more intimate know-

Announcing

THE NEW *Bridgeport* 1 H.P. MILLING, DRILLING AND BORING ATTACHMENT

... to meet demands
for handling
heavier work

This new "Bridgeport" fills a current need for a versatile machine capable of handling milling, drilling, and boring beyond the capacity of the universally popular standard Master Milling Attachment. A 1 HP motorized head provides ample power for the heavy duty work for which it is designed.

Modern features of this new attachment include:

- eight spindle speeds from 80 to 2720 RPM.
- back geared spindle drive unit designed to utilize full horsepower at all speeds without belt slippage.
- 5" quill travel.
- power feed to quill in 3 steps: .0015-.003-.006 inch per spindle revolution.
- positive two-way power feed stop tripping mechanism.
- spindle brake and lock for convenient changing of tools.
- collet capacity up to $\frac{3}{4}$ " diameter.

Holders for shell mills and fly cutting heads available also Bridgeport No. 2 Boring Head to fit this new milling attachment.

Further details available on request.



Bridgeport MACHINES, INC.

Bridgeport, Connecticut

Manufacturers of High Speed Milling Attachments and Turret Milling Machines



LITTELL Air-Blast Valve automatically ejects pieces from punch presses. Keeps operator's hand out of danger zone. Increases safety and speed. Air nozzle quickly adjustable.

Other Littell safety devices include Pres-Vac Safety Feeders for picking up and feeding flat-surfaced materials; also, air-operated Mechanical Pickers for feeding pieces that vacuum lift will not pick up.

Littell makes a complete line of Automatic Reels, Feeds, Straighteners, Scrap Cutters, etc.

REQUEST BULLETINS

F.J. LITTELL MACHINE CO.
4153 RAVENSWOOD AVE. CHICAGO, ILL.

ledge of your company, your products, and a better appreciation of just what you can do for him. It's your opportunity to sell yourself to your customer on your own home grounds, make the most of it!

In conclusion, may I repeat: office routine is not time wasted; it is a necessary and vital part of your daily activity. You must have a system: follow it. Efficient office methods provide more time in the field and mean more orders, which of course is the desired objective. End of lecture No. 24.



Severance
HIGH SPEED
CHATTERLESS COUNTERSINKS

- Shear cutting action
- Speedy—for air-tested seats
- Materials—up to 63-C hardness

17 stock sizes up to 2" diameter
30° 41° 45° and 60° angles with C/L
Shanks—plain, tang drive, tapers

ENGINEERING SERVICE
Write for Bulletin 15-C

SEVERANCE TOOL INDUSTRIES, Inc.
722 Iowa Ave., Saginaw, Michigan



WHEN

you want "the best" in cap screws, set screws, milled studs and coupling bolts, remember . . .

WHO*

MAKES THEM

*WHO is... **Wm. H. Occemiller Co.**
YORK, PENNA.

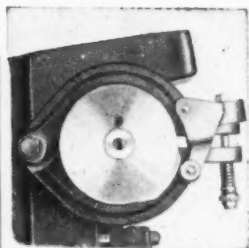
Write for name of nearest distributor and our free illustrated folder.

Another... OUTSTANDING FEATURE
OF

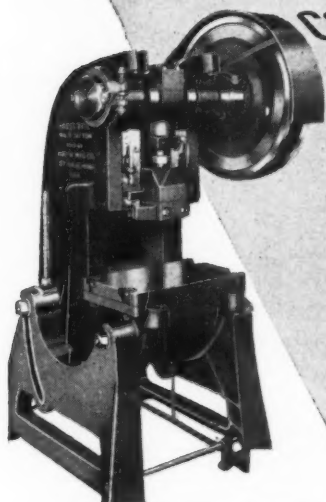
PRESS-RITE

PUNCH PRESSES

THE AUTOMATIC
CAM ACTUATED BRAKE



**CUTS
PRODUCTION
COSTS**



**6 MODELS
5 TO 30 TON
CAPACITIES
BULLETIN P-348-B**

STOP . . . the press automatically at "top center" with a brake that is cam actuated. Braking power is adjusted by the same simple conventional method used in ordinary constant drag brakes and can be instantly set to compensate for various weights of dies used. With cam actuation, constant drag is eliminated and full motor power is utilized to turn out more work at lower cost.

Other cost cutting features of Press-Rite Presses include:

- Exclusive non-repeat safety mechanism
- Triple ramway lubrication
- Heavy duty reinforced frame

See them at your dealer today.

WRITE FOR BULLETIN P-348B.

Sales Service Machine Tool Co.



**PRESS
RITE
PRESSES**



**SHAPE
RITE
SHAPERS**



**KELLER
POWER
HACK SAWS**

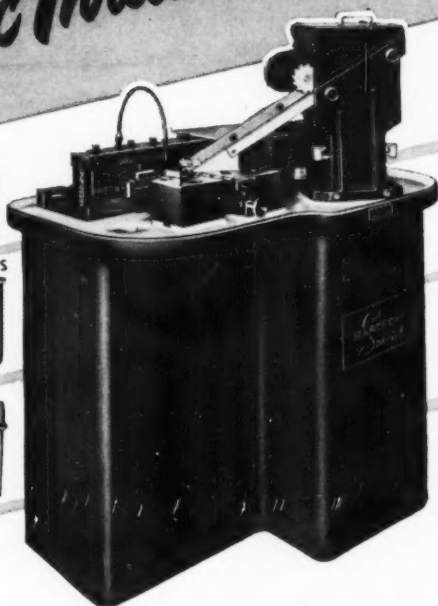
**2363 UNIVERSITY AVENUE
ST. PAUL 4, MINNESOTA**

LOW COST — HIGH PRODUCTION

HARTFORD

Special

Automatic Thread Roller



This Automatic Thread Roller is designed to solve standard and special thread rolling problems on small size screws from .086" to .190" in diameter with thread length capacity from 1/4" to 1 1/2", rolling consistently to Class 3 Thread Fit. Careful engineering and rugged construction make it capable of continued high production runs with startling economy.

The "Hartford Special" Automatic Thread Roller incorporates such outstanding features as Completely Automatic Feed, Filtered Lubrication System, "Table Top" Working Level, Vibration-Free Operation, plus many more.

Our engineering staff is always available to help you work out your thread rolling problems. Write now for complete information.

HARTFORD

Special

Automatic Drilling and Tapping Machinery • Swaging Machines
Die Pulling Machines • Control Machine Work • Gears • Cams
"Super-Spacers" • "Four-Piece" Milling Vises • "V-Block" Milling Fixtures

THE HARTFORD SPECIAL MACHINERY CO.
287 Homestead Ave., Hartford 5, Conn.

Please send me free Bulletin TR-100 describing your Automatic Thread Roller.

Name Pos.

Company

Address

3 City Zone State

Improved

SELLING TECHNIQUE

FOR MORE SALES



Lecture No. 25

THE TECHNIQUE OF A SALES ENGINEERING INTERVIEW

by

E. B. MacDonald, Vice President

Syracuse Supply Company

There are roughly three types of interviews: missionary, follow-up, and service interviews. Each type requires a certain technique with which the salesman must be familiar. The author discusses the various types at length with many helpful hints on conducting the interviews. The good salesman allows the prospect to sell himself, interjecting questions now and again on the order of, "How'm I doing?" It must be constantly borne in mind that customer benefits are to be sold; not merely a machine, but more production, etc.

INTERVIEWS can be classified into three or possibly four different groups in the following order:

Missionary: I believe we all understand this term even though various other names are or could be applied such as "cold turkey" calls, "interest arousing" calls, etc.

A missionary call must be designed to create a desire in the buyers mind for a machine tool that you want to sell him.

It must be a machine that he could conceivably use or absolutely requires. Obviously, it is worse than useless to offer some highly specialized, high-production single purpose machine to a tool and die shop that he would not give shop space to if you gave him the machine. On the other hand, you should never try to make a missionary without some definite machine about which to talk to the prospect.

Wolverine

DROP-FORGED QUICK-ACTION

TOGGLE CLAMPS

For Heavy Duty and High Production

Wolverine Toggle Clamps have been used extensively in the automotive, welding, fabricating, woodworking and metal working industries for over 20 years. Compare them with other clamps as to speed, strength, durability, accuracy, versatility and economy. There is a size and type of Wolverine clamp to suit your needs, write for bulletin C-48.

**IMMEDIATE
DELIVERY**



WOLVERINE TOOL CO.

1480 East Woodbridge Street • Detroit 7, Michigan

A weak or purposeless call is not good, although it is better than no call at all. By simply exposing yourself to prospective customers, you will find some who will force you to take an inquiry and even give you orders. You can, however, multiply this number many times by using the correct methods, and while you cannot always strike just the right thing to talk to him about, at least you are planting seeds for harvest and in a surprising number of cases you will find your prospect saying something like this: "Well, this is a nice machine and we could probably use one in the future but right now we need such and such a

machine much more." As a distributor salesman, there's your cue. A direct inquiry for an immediate need.

Now that we have established either a type of machine your customer could use to advantage or have found out what his pressing need for machine tools is, the technique of the interview should be about as follows:

Radiate enough genuine enthusiasm to be contagious but not to the point where customer might get the impression that it is an "act." To convince him that you have just the machine he needs, you must first be sure of it yourself.

Most machine tool builders furnish well-illustrated catalogs, usually showing a head-on or quarter view of the machine. This can be used to give the customer quickly a general picture of the machine and since most, if not all, modern machines have been streamlined and are pleasing to the eye, a good impression usually results. After briefly pointing out some of the reasons for its nice appearance, or some interesting phase of its development, ask your first "How am I doing?" question by saying "Isn't that a fine-looking machine?" Or you may use any one of a dozen variations. Invariably, he will agree with you whether he has actually arrived at an opinion or not because you have approached him in a gentlemanly manner, you have been courteous and considerate, and right now the bloom of genuine enthusiasm is shining on your face; he just naturally

Job File No. 1949

MALLEABLE NUT PRODUCTION

Fully Automatic

CONTROLLED BY T-J CYLINDERS

10 TON
CYLINDER

6 TON
CYLINDER

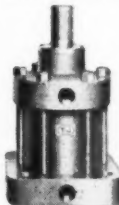
40 TON
CYLINDER

8 TON
CYLINDER

All moving parts are controlled hydraulically by T-J Cylinders —on this Malleable Nut Production Machine designed and built by Roy Hays & Associates, Rockford, Ill., for the Wagner Malleable Products Co., Decatur, Ill.

It's *fully automatic*—the operator only places nuts in stations. Nine T-J Cylinders, 40 ton to $\frac{1}{2}$ ton, help complete the job of cutting off sprue, sizing, boring, facing, chamfering and threading 2,500- $\frac{3}{4}$ std. pipe thread nuts per hour.

For your tough jobs of power movement —pushing, pulling or lifting—*save labor, speed production and cut costs* with T-J Air and Hydraulic Cylinders! Many standard sizes and styles . . . both cushioned and non-cushioned types . . . 100 lb. or 50,000 lb. Precision-built for long-life dependability. Write for latest catalogs. The Tomkins-Johnson Co., Jackson, Michigan.



FOR POWER MOVEMENT IN ANY DIRECTION



100 LB. or 50,000 LB.

32 YEARS EXPERIENCE

T-J

TOMKINS-JOHNSON

HYDRAULIC AIR AND HYDRAULIC CYLINDERS CUTTERS CLINCHERS

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

155



LOOK INTO LINLEY

Machines that pay
for themselves.

4LN49

A BIG PRIZE IN A SMALL PACKAGE

Save on original cost, save whenever you use the Linley Miller & Jig Borer. Its small size is right for work that's just below the level of the big fellows. Needs only 2½ sq. ft. of space, yet has ample table size (7" x 17½"). Eight spindle speeds from 275 to 4250 r.p.m. Easy set-up, quick changeover, anti-backlash in quill travel, direct micrometer setting—all add to the efficiency of this sturdy machine.

LINLEY BROTHERS CO.

663 STATE ST., EXTENSION
BRIDGEPORT 1, CONNECTICUT

tion he will get, the better finish, less time required for second operation work, closer tolerances, etc., etc.

How many, many times do we say to a customer, "We have heat-treated gears, anti-friction bearings, filtered oil, multiple splined shafts, forced feed lubrication, quick speed and feed selection mechanism, nitralloy spindles," etc., only to leave it up to the customer to translate these things into results that will benefit him.

We hope he will see the advantages to him but we don't know for sure what reaction he will have. Perhaps his idea of anti-friction bearings is that they require less frequent lubrication than plain bearings, whereas they also consume less horsepower, generate less heat, giving better alignment, last longer, are easily replaced when worn out and

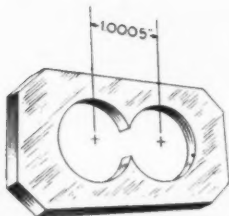
when replaced give new machine accuracy whereas it is difficult to properly scrape in plain bearings, permit higher speeds, etc.

Tell him the hardened gears, lubrication system, anti-friction bearings, splined shafts, etc. are used to reduce maintenance (save money and down time) to keep the machine accurate longer by reducing wear. The quick speed change steps up production, for the operator will change speeds when he should because it is so easy to do it. In my opinion, it is much better to err in

wants to treat you as nicely as you have treated him and he hates to pin your ears back, so he agrees. This is the first step in getting him to sell himself on your machine.

Then, in as logical order as possible, go through the features of the machine showing cutaways or rollouts, explaining why the machine is so made, what is accomplished by each feature and, above all, point out the benefits he will receive. I repeat, above all, the benefits he will receive: the money he will save in maintenance, the increased produc-

Put jobs like this ...



Two intersecting punched holes are reamed to size and location within .0005". The stainless steel work piece is held in a table fixture and fed into the cutter by transverse lever feed. $\frac{3}{16}$ " of stock is removed on the diameters. Production is 700 pieces per nine-hour shift on a Nichols Production Model Miller.

on "the miller that uses its head"

Because the Nichols Miller is endowed with an unusual versatility, by virtue of its unique rise-and-fall spindle, it is often a "jack of all trades" in a shop. In addition to conventional milling, it is used for such varied jobs as profiling, drilling, reaming, turning, boring, facing, key seating, broaching and vertical milling. Yet this same machine is designed so functionally and built so accurately that it is used for high production of precision parts with tolerances to "tenths."

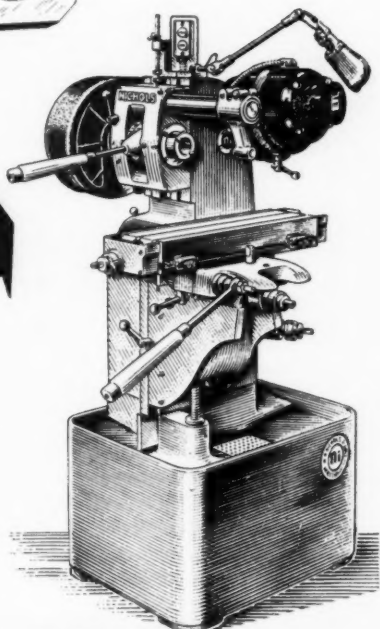
Nichols Millers are made in the following models, all having the same basic features but modified especially for particular requirements: The Standard Model for general shop use; the Tool Room Model with special table and extra large micrometer dials for finer measuring control; the Semi-Automatic Model equipped with automatic pneumatic table feed; the Production Model with lever longitudinal and transverse feeds; and three Double Spindle Models for use where the simultaneous action of two cutters is practical.

**MANUFACTURED BY W. H. NICHOLS COMPANY
WALTHAM, MASSACHUSETTS**

CONDENSED SPECIFICATIONS

Table Working Surface	6 $\frac{3}{4}$ " x 21" or 30"
Longitudinal Travel (screw or lever)	10" or 19"
Transverse Travel (screw or lever)	7"
Vertical Travel — Knee	13 $\frac{1}{2}$ "
Rise and Fall of Spindle	4 $\frac{1}{2}$ "
Selective Speed Ranges up to 5000 R.P.M.	
Weight	1250 lbs.

NATIONAL DISTRIBUTORS NICHOLS-MORRIS CORP., 50-G CHURCH ST., NEW YORK 7, N. Y.



THE
Nichols
MILLER



Write today for new Nichols Miller Catalog which describes in detail all five models of "The Miller that uses its Head."

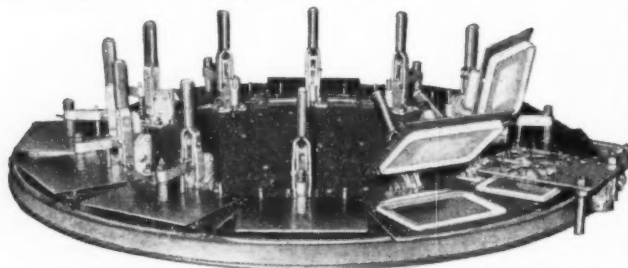


When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

157



The Merry-Go-Round that Never Broke Down..



No, this "Merry-go-round" never broke down, but it does break production bottlenecks every day, thanks to versatile De-Sta-Co Toggle Clamps!

It's a high-production assembly fixture for a new plastic ink pad. Here, the bottom of the case is being bonded to the body. Requirements: fast bonding cycle . . . positive clamping pressure for a perfect bond . . . precise alignment of work pieces for accurate assembly. Rapid toggle action, sure holding pressure, rugged durability and well-engineered design make De-Sta-Co No. 207U Toggle Clamps the tool designer's logical choice for this application.

And they're the logical choice, too, for holding parts during

• Assembly • Welding • Riveting • Machining

of plastics, metal and other materials. Whatever your work-holding problem, there's a De-Sta-Co Toggle Clamp that's a "natural" to solve it. The complete line of more than 40 stationary and portable De-Sta-Co Toggle Clamps is shown in Clamp Catalog No. 49. Send for your copy today, and the name of our stocking representative nearest you.

DETROIT STAMPING CO.

347 MIDLAND AVE.

DETROIT 3, MICHIGAN

favor of emphasizing customer benefits rather than machine features.

Let's take a well-known mechanical device—the automobile—and see how it is sold.

Did any of you ever see a newspaper ad or a magazine or even the catalog put out by the car manufacturer that tried to sell cars by saying, "This car has an engine with a 3" diameter piston, a 4½" stroke, drop forged crankshaft with a top speed of 3800 RPM"? How many people, even those technically inclined, would translate bore and stroke into cubic inch displacement, and displacement and speed into horsepower,

them up.

On the other hand, isn't this pretty much the same with machine tools? So, I repeat again, be sure to emphasize customer benefits.

Many machine tool buyers have no way of knowing all these things. Many do not have the time or the training to analyze the features we build into equipment, so tell them as many times in as many interesting ways as you can.

This will range all the way from a very casual mentioning of features to a detailed discussion of basic fundamentals depending on your customer's training. All during this discussion of mach-

and horsepower into the car's ability to accelerate quickly and smoothly and to take it over hills with ease?

I don't think you ever saw an ad like this. Instead, the ads deal only with customer benefits. They emphasize zip and power and ability to float over hills and to leave other cars embarrassed in stop light get-aways.

Sure, in the manufacturers' specifications some dimensions are given in very fine print on the back page but by dealing only with customer benefits, many car manufacturers do all right in sales.

Now, this may be an extreme example. Perhaps they succeed because automobiles have settled down to a few well-known makes, and everyone assumes that such and such a make would not claim these customer benefits if they did not have the mechanical features to back

Veeder-Root

CLUTCH SPEED COUNTER



Quickly and accurately measures the R.P.M. of shafts or other revolving parts. A necessity for keeping motors, generators, shafting and machines, operating at efficient speeds. To use, simply press against revolving object and time one minute, using any watch with a second hand. The counter will then show the exact R.P.M. The Veeder-Root spring clutch allows the operator's attention to be given to the watch instead of the counter . . . eliminates need for a stop watch in speed checking. The unit is never affected by magnetism. If not available at your supply house, order direct using coupon below.

HAND TALLY COUNTER

Counts anything you can see!

Useful for checking machine production, equipment, stock, idle machines, attendance, in fact, anything that needs counting. Easily returned to zero by turning the reset knob.

Veeder-Root

The Counting Houses of Industry



VEEDER-ROOT, INC., HARTFORD 2, CONN.

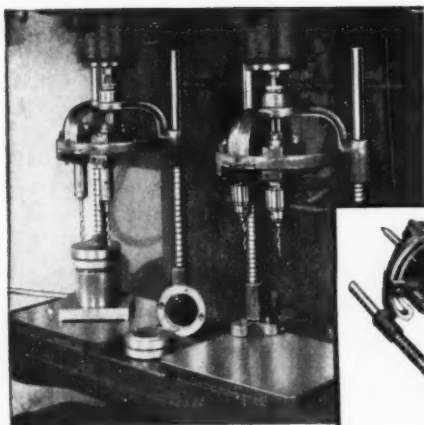
Please send the following: . . .

- ☐ Literature on Clutch Speed Counter
- ☐ Literature on Hand Tally Counter
- ☐ Quantity.....Veeder-Root Clutch Speed Counters @ \$5.50 each
- ☐ Quantity.....Veeder-Root Hand Tally Counters @ \$7.50 each

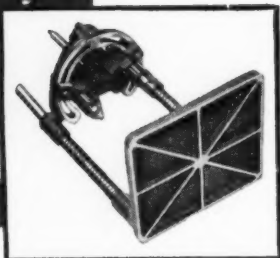
COMPANY.....

STREET.....CITY.....STATE.....

NAME.....



Overarm Type has heavy guide pins, ground base 12 by 14 inches.



LINDERME 2-Spindle Head

"increased production from 160 to 600 an hour"

This story is typical of the many applications of Linderme 2-spindle drill heads on long and short runs. You'll like these features: drills, taps—in metal, wood, plastics; quick, accurate adjustment, $\frac{1}{2}$ " to 6" centers; two minute set-up on most drill presses in

your shop; anti-friction bearings, rugged gearing, quality machining—and Linderme's low initial cost for Overarm or Sleeve Types—Twelve models, capacities up to $\frac{3}{4}$ ", available with G.M. Sleeves or Morse Tapers. Write for complete catalog.

LINDERME MACHINE AND TOOL CO., INC.

12253 COYLE AVE. • DETROIT 27, MICH.

ine features and customer benefits, keep asking at appropriate places your "How am I doing?" question; for instance, "Isn't that the best construction you ever saw?"; "Don't you think that's a good enough design?"; "Isn't that about the most convenient arrangement possible?"; What is your opinion of this, isn't it clever?"

In this way you are, in effect, asking him to sell himself, you are asking for his opinion and subtly flattering his judgment, but you will note that while you are asking him a question you al-

ways suggest an affirmative answer.

It's surprising the number of times the customer will agree with you and each time he does, he is unconsciously helping to sell himself. If he doesn't agree, you can find out what his objections are and then you know what point or points to work on; where you will have to bolster your case. In other words, you find out where you stand. Let the customer talk and express his opinion. Don't try to smother him with a set talk, winding up in the dark as to whether he likes your machine or not. If he does not agree, perhaps it's because he does not thoroughly understand the feature, or is basing his judgment on an experience of many years ago. Old-timers can well remember the resistance to geared-head machines, anti-friction bearings, individual motor

drives and multiple-speed motors.

Some poor results were obtained from all of these innovations at first, but many improvements have been made. Still, some buyers formed opinions ten, fifteen, and twenty years ago and closed their eyes and minds to progress. Therefore, it is important to have the answer to your "How am I doing?" question.

We could talk for hours about various objections and how to overcome them and still leave many uncovered. So let's assume that in general our machine is reasonably well accepted and that we know what the objections are and that

SMALL • EFFICIENT • INEXPENSIVE • PRACTICAL

DUCON UNIT-TYPE DUST COLLECTOR for dust control at machines

Compactness is combined with efficiency in DUCON design which features multiple numbers of cloth filter bags to provide maximum filter area to air flow.

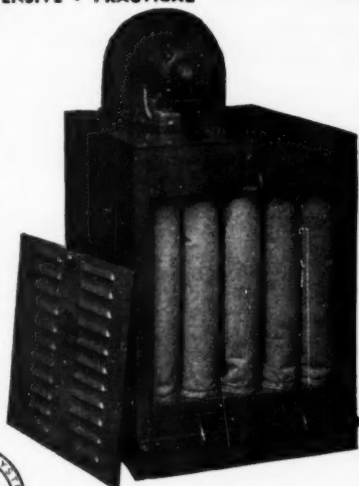
Filter bags readily cleaned by positive shaker and the dust thus dislodged drops to and accumulates in receptacle pan at bottom of unit. DUCON cloth filter bags last indefinitely providing low cost dust control without constant maintenance.

Complete information given in Bulletin No. U.F.45. Ask for your copy.

DUCON PRODUCTS—

Centrifugal — Wash Dust and Fume Collectors
High Efficiency Cyclones
Gravity and Inertial Dust Separators
Multitube Cloth Dust Collectors
"Unit-Type" Tubular Dust Collectors
Pneumatic Bag Cleaners
Dewatering Tanks
Bin Indicators
Drive Protection Switches
Complete Dust Collecting Installations

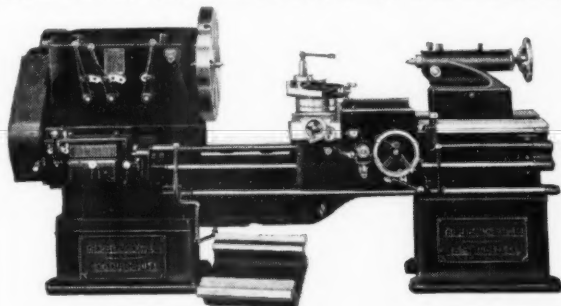
THE DUCON COMPANY
147 E. 2nd St. Mineola, N. Y.



DUCON Unit showing filter bag arrangement.
Capacities 200—3000 Cubic Feet of Air per minute—four standard sizes.

NEBEL Removable Block Gap Lathes

furnished in the Geared Head Motor Driven Type, 3 Step Cone Double Back Gear Belt Driven Type or with Motorized Headstock. Especially adapted for repair and maintenance as well as for general manufacturing. Handle a large variety of work with large swing through the gap.



All Geared headstock type completely equipped with Timken Bearings, with motor mounted on rear of lathe. Quick change gear box, compound rest, steady rest, chasing dial, face plate, driver plate, wrenches, tool post and centers.

Furnished in four different sizes as follows:
Series "LN" 18/27",
Series "AA" 20/30",
Series "B" 22/23", and
Series "D" 25/40".

Write for Circular
Giving Complete
Information

THE NEBEL MACHINE TOOL COMPANY
CINCINNATI 25, OHIO

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

161



BRASS, COPPER
AND OIL BOARD
STENCILS

PIPE AND TUBE
STENCILS

STENCIL CUTTING
MACHINES

FOUNTAIN STENCIL
BRUSHES

STENCIL INKS,
POTS, PAPER

From the simplest paper stencil to the giant "Hug-Tite" pipe marking stencils with adjustable curvature, Pannier Bros. line includes stencils for every marking purpose. For shipping boxes, barrel and keg heads, steel sheets, concrete surfaces, telephone and power line poles, cable reels—whatever the surface or product to be marked, Pannier's complete line assures you of exactly the right type of stencil for legible, economical marking. Write!



our customer wants a quotation on the machine.

I believe we are all agreed that the main reason our customer is going to buy a machine is that he will get certain benefits from the purchase and these benefits must total, over a period of time, an amount greater than the purchase price of the machine. Therefore, if we can reduce his benefits to dollars and cents we not only strengthen our position but we help our prospect to get an appropriation to buy. This is especially true in the larger plants where the machine tool buyer has to go to the

reference whether the figures say ".001" or ".0001".

Get location points, where the part may be chucked, whether roughing and finishing cuts are necessary, whether the close tolerances are going to be ground afterward, etc.

Does the customer prefer high-speed or cemented carbide tools? How many pieces are required in any given time? Is the monthly or yearly requirement high? This will help to determine how extensive the tooling should be.

Can the lots be increased if the setup time is long? Can you run six months'

Treasurer or the Board of Directors for money, but it also helps in the case of a small plant where we may be selling the owner himself.

If the job to be done is a production job, get prints so an engineering study can be made.

On the print, or prints, be sure that the material is clearly specified and if the material specification number is not known, get the analysis; better still, get the surface feet at which customer is machining it and whether he is using high-speed steel or cemented carbide tools. Many large users of steel have developed a numbering system of their own so it is well to get complete information. If the specifications give, for instance, S.A.E. numbers, it is usually safe to assume factory engineers will know all about its characteristics.

Be sure tolerances are plainly shown as it makes a great deal of difference whether the figures say ".001" or ".0001".

CASE REPORT No. 48 from a series of actual cases recording the successful application of BEAR DY-NAMIC BALANCING to Industry.

Electric Tool Manufacturer Adds Years To Life Of His Products Through Dy-Namic Balancing

Because Bear Dy-Namic Balancing makes for a smooth and more quietly-operating rotating assembly, free from friction and vibration, it adds years to the life of the finished product. This has been proven again and again by U. S. Electrical Tool Co. and hundreds of other manufacturers who have Bear-Balanced rotating parts weighing from 4 oz. to 8 tons. An operation similar to yours is most likely represented in our Case Report file. Write for particulars, as well as a copy of the latest Bear Industrial Balancing Catalog. Bear Mfg. Co., Dept. M-20 Rock Island, Ill. 2655 MTR

United States Electrical Tool Co., Cincinnati, has been Bear-Balancing fans, armatures and fan armature assemblies for five years. Daily balancing operations number from 95 to 135, require from 3 to 5 1/2 minutes each.



BEAR STATIC AND
DY-NAMIC BALANCING MACHINES

*It isn't polite to point,
but....*

Look at this!

THIS head has been designed mainly for high speeds, although it is also used for large cluster boxes on way type machines.

Designed to eliminate oil seals and other rubbing parts, it is fully ball bearing equipped. It contains an oil pump with a built-in trouble-free vane type pump, which pumps the oil to the top of the head and by centrifugal force spreads the oil over the entire upper surface of the head, then cascades down over the bearings and gears.

Ideal for high speed sensitive drilling machines, its castings are made of high-grade aluminum alloy. All spindles and shafts are made of alloy steel properly heat-treated and ground.

IMMEDIATE DELIVERY!

We manufacture all types of multiple spindle, fixed center, adjustable and lead screw tapping heads.

UNITED STATES DRILL HEAD CO. CINCINNATI 4, OHIO

34 Spindles in 6" Square
Oil circulating with self-contained pump, speeds in excess of 10,000 RPM.



SINCE 1915

Fiske

DIE CASTING • FORGING UPSETTING

Compounds

FISKE'S 231 DIE CASTING COMPOUND excellent for die casting zinc and aluminum alloys. Results in cleaner, smoother pieces, free from surface imperfections and discolorations. Stronger and more accurate castings due to minimum gas formations. Does not flash, fume or solder.

FISKE'S GRAPHITE HOT DIE COMPOUNDS for best results in forging and upsetting operations. They eliminate carbon formation on dies, increase die life, with more pieces between changes. Application by brush, swab or spray.

There is a Fiske Lubricant for every metal working operation. Each is an outstanding product and results in more production, better finish and increased tool life. Let us solve your special problems. Write today to Fiske Brothers Refining Co., 135 Lockwood St., Newark 5, N. J., or 1506 Oakdale Avenue, Toledo 5, Ohio.



Established 1870

METAL WORKING LUBRICANTS

production instead of three months', pointing out that the extra cost of an increased inventory would probably be offset many times by the saving that could be effected. Can like parts, like pins or washers of assorted sizes be grouped so as to minimize setup time?

Find out as nearly as possible how the job is being run: What are the objections to present setup? What operations can be combined? What production is he now getting? Does customer object to combination tools, such as step drills, combination drills and counterbores, formed grinding wheels or whatever else

may be necessary to get as good production as possible? Any information you can give your production engineers permits them to submit the best possible layout.

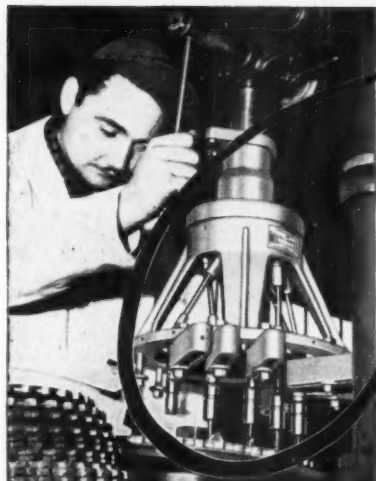
For instance, it is a waste of time to lay out a job with cemented carbide tools basing all production figures on this type of cutting material only to find on submitting it that your customer will not consider that type of tooling. It not only is a waste of time but before you can get a new layout back it may be too late.

With the proper information available with your inquiry, your production engineers can make an intelligent layout and proposal which you can submit to your customers. If your customer changes his mind or his plans he has a ready alibi for himself, whereas he is usually not so lenient with you. When the proposal

has been submitted, we come to the second type of interview. **The Follow-Up.** The follow-up interview uses many of the techniques already discussed, particularly in regard to the approach.

Since we already have an object in calling, our function then is to have as much information as possible with regard to the proposal so as to be able to answer any questions that may have arisen in the customer's mind since he has had time to study our proposal. These may range all the way from machine specifications to why certain things are done in the tooling.

MULTIPLE DRILLING with a . . .



MULTI-DRILL

**Increases Capacity
Up to 800%**

**ADJUSTABLE TO ANY HOLE PATTERN
FITS ANY DRILL PRESS**

If your production requires drilling from 2 to 8 holes in a work piece, a MULTI-DRILL will cut costs and speed output up to 800%. The MULTI-DRILL is universally adjustable to any hole pattern — is compactly built to permit easy, unhampered operation with drill jigs or other special fixtures. Ruggedly built to take the wear and tear of high production work, the MULTI-DRILL will handle your long and short run multiple drilling jobs with ease and economy. The MULTI-DRILL will drill on hole centers as close as $\frac{1}{8}$ " — handle drill sizes up to $\frac{3}{4}$ " in steel. Special adaptations available.

There is a Commander MULTI-DRILL Distributor in your area. Write for his name, literature and complete details.

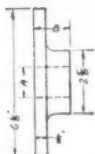
COMMANDER MFG. CO.
1227 West Kinzie St. Chicago 24, Illinois

Product of Commander — Builder of the Commander Tapper



8" FACE PLATE

Machined all over. Equipped with four slots for clamping work. Threaded for $1\frac{1}{2}$ x 8P Spindles. Shipping weight 8 lbs.
Catalog No. 23.....Price \$6.00



**Semi Finished
Back Plates
and Castings**

Casting only: A, $1\frac{1}{4}$ " B, $1\frac{1}{2}$ "
Catalog No. 37.....Price \$2.40
Casting only: A, $\frac{3}{4}$ " B, $1\frac{1}{2}$ "
Catalog No. 38.....Price \$2.40
Semi-finished: "A" Threaded $1\frac{1}{2}$ "—8P; "B"
Faced to $1\frac{1}{4}$ "
Catalog No. 39.....Price \$3.00
Semi-finished: "A" Threaded 1"—8P; "B"
Faced to $1\frac{1}{4}$ "
Catalog No. 42.....Price \$3.00



8" JIG PLATE

Machined all over—same as 8 inch face plate except that it is thicker and is without slots. Just the thing for mounting special jobs. Jigs can be installed permanently for production. Shipping weight 10 lbs.
Catalog No. 21.....Price \$7.20

OTHER Unique LATHE ATTACHMENTS AVAILABLE

Bed Turret
Tailstock Turret
Taper Attachment
Tangent Cut Box Tool
Draw-in Collet Chuck
Straddle Knurl
Milling Attachment
Threading Dial Indicator
Boring Bars and Holders
Cross Slide Jig Plate

M. PAUL WAHLUND
MECHANICAL LABORATORY

Box 16 GRANT, IOWA Phone 110

See your dealer or write for literature.
Facilities available for contract manufacturing.

Threadwell Tools do many jobs



try them
on your
tough ones



All too often adjustable round split dies are taken for granted. It's easy to forget that they, too, are cutting tools and should be judged on their performance and efficiency. For example, improper chamfering on the lands of the die results in too great a lead error per inch which makes it difficult to lead on the thread, and consequently the tool is not free cutting. It is also important that the die has careful spring tempering in the area of the clearance hole opposite the slot to insure proper movement of the die for adjustment. Threadwell Adjustable Round Split Dies are designed with these engineering features. The best way to recognize their superiority is to try them and see for yourself.



See your local supplier, or write for Bulletin 437

THREADWELL TAP & DIE COMPANY, Greenfield, Massachusetts
Taps • Dies • Drills • Counterbores • Keyway Broaches • Screw-plates • Gages • Pipe Threaders

Some of these questions, particularly on tooling, may have to be referred back to your engineering department. This, of course, should be done promptly and with full explanation so your engineers will know exactly what is required and then the new information, when received, must be promptly transmitted to your customer.

On complicated jobs, several follow-up calls may be necessary to get your customer's desires and your proposals in accord, but these are of extreme importance since if you do not have a meeting of the minds you have no basis on

satisfactorily met or some compromise arrived at and that our proposal is in accord with our customer's desires and needs and that it now is a matter of taking the final plunge to get the customer to sign the order, committing himself to spending a certain amount of money. This requires a certain amount of courage on the part of the buyer for a variety of reasons.

In the first place, he must now put to the acid test his confidence in you and in your factory; he must back up his own judgment with thousands of hard dollars and if he is in business for

which to do business.

Eventually this is accomplished and you may arrive at a call which can be a combination follow-up and closing call. Once you get your proposal the way your customer wants it, do not fail during the interview to ask him in two or three various ways for the order.

There are almost an infinite number of ways to do this. One very apropos way at the moment is, "Let's get this equipment ordered before prices advance," or, "We could comfortably make delivery to meet your schedule if you order right away," or a very simple request such as, "Since we now have the job lined up the way you want it, why not give me an order number so we can start detailed layouts?"

At any rate, ask for the order.

Closing Call: On this call we assume that all objections have been

LEAD SCREW TAPPING...

ON YOUR OWN DRILL PRESS!

With this ROTOREX tapping head you can convert your drill press to a precision tapping machine in a matter of minutes, and consistently produce Class III threads. To change to drilling, simply swing the ROTOREX to one side.



Precision ground lead screw provides accurate, controlled tapping from 0-80 to 7/8".

CHECK THESE FEATURES:

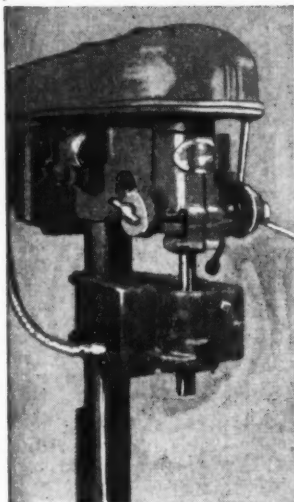
1. Positive, automatic control of lead.
2. Hardened, precision ground lead screws.
3. Instantaneous emergency reverse.
4. Complete automatic cycle.
5. Accurate control of depth—accuracy to .010.
6. Foot control frees operator's hand for loading.
7. Capacity 0-80 to 7/8".
8. Price \$195.00 complete with Lead Screw, F.O.B. Riverside.



HUNTER-DOUGLAS CORP.

Blaine & Pachappa Sts.

Riverside, California



MODEL 1236
36 IN. THROAT
12 GAUGE
CAPACITY

CIRCLE
CUTTING
ATTACHMENT
Included as
STANDARD
EQUIPMENT
with this
machine

LIBERT MACHINE CO.
GREEN BAY • WISCONSIN

for BETTER PRODUCTION and MAINTENANCE *at lower cost*

A proved time-saver in any sized shop. Libert's *flexibility* gives you a wider variety of work—clean shearing of flat or formed sheet metal... straight or irregular shapes... inside or outside cuts. Libert *simplicity* means that even unskilled labor soon does accurate work, lots of it *and fast!*

Write for bulletin.

Made in sizes up to 60 in. throat, 10 gauge capacity

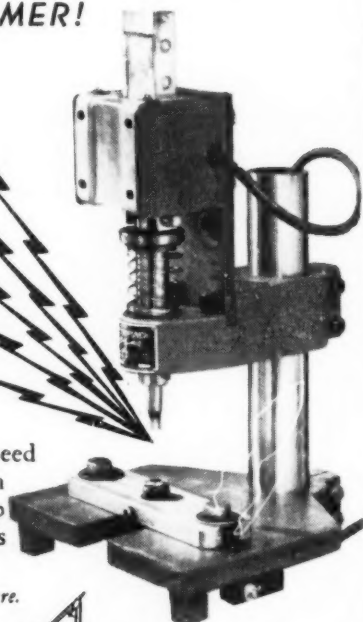
Libert *Hi-Speed* SHEAR

ELECTROPUNCH



A NEW LIGHTNING FAST ELECTRIC
IMPACT HAMMER!

staking
riveting
cutting
marking
swaging



A low-priced, high-speed
production unit with
controllable impact up
to a ton. Four models
available.

Write for descriptive literature.

BLACK & WEBSTER, INC.

30 PLEASANT STREET, NEEDHAM 92, MASS.

himself, an error in his judgment or confidence could well mean financial embarrassment or even bankruptcy. If he is employed by a large concern, it could mean dismissal, or at least loss of standing.

So we must be patient and reassuring and review the benefits he will secure, the length of time required to get his investment back, the better product he will be making, the possibility of cost reduction that will open up new markets for his product, perhaps the saving of valuable floor space, and all the other customer benefits that you have been

able to develop.

By your, "How am I doing?" question find out if he considers the benefits he will receive are sufficient to warrant the purchasing price. Is he in doubt as to the production figures given? Does he have any doubts as to whether he will receive any of the benefits we have told him he would get? If so, about what is he in doubt? These doubts can, of course, cover a wide scope, and an infinite number of answers are suggested.

Let's consider just a few typical ones.

Production figures are doubted. Get a re-check from factory engineers with a guarantee that demonstrator will make the time with reasonable effort. Perhaps you have been fortunate enough to have sold a similar machine in your territory that he can see in operation in the plant of a satisfied

customer that he knows and respects. Have list of satisfied users in or out of your territory, preferably of national reputation—successful plants who are noted for smart buying. Sometimes the sheer number of customers, regardless of standing, is impressive.

Doubts about mechanical features can be cleared up many times by asking for a factory man to help you. He can always tell his story in his own words and again drive home points that you have previously made.

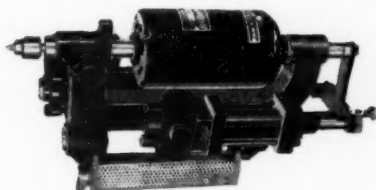
Perhaps the individual buyer does not have the cash available, making it nec-

"Speed-Right"
DRILLING MACHINES

FOR PRODUCTION DRILLING.004-.156"

CUT COST - INCREASE OUTPUT

- Fingertip Variable Speed
- Fast Approach Air Feed
- Hydraulic Feed Control
- Electric or Manual Controls
- Deep Hole Drill Cleaning
- Sensitive Precision Spindle
- 1000-10000, 2500-15000 RPM



Write for 'Five Steps To Better Drilling'

Model 107 shown
\$213.50, and up
COMPLETE

THE ELECTRO-MECHANO CO.
263 EAST ERIE STREET
MILWAUKEE 2, WISCONSIN



THIS SIMPLE, SURE-ACTION FEATURE GIVES EXTRA SAFETY

JOHNSON puts the exclusive SAFETY TRIP on all models of Power Presses at no extra cost! This patented non-repeating device uses two springs to hold release lever up. If one fails, the other takes over. If both fail, clutch automatically disengages. Springs replaced in 30 seconds without stopping machine.

Johnson

**MACHINE
and PRESS CORP.**

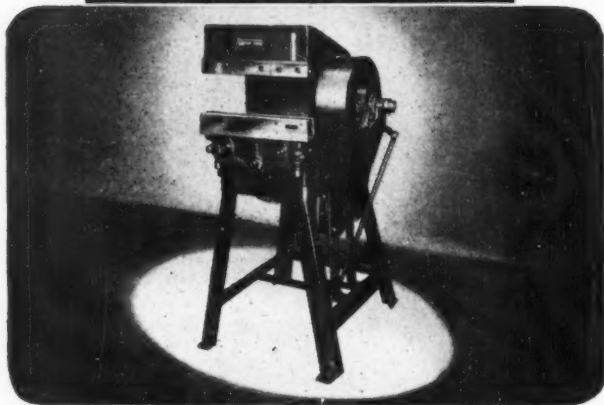
620 W. INDIANA AVE. • ELKHART, IND

IF YOU THINK SAFETY FIRST, think first of Johnson. Write for information on 8 models of open-back inclinable Power Presses now available. Ask about the new extra capacity, extra power No. 55 Press.

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

169

**WHITNEY METAL
TOOL COMPANY
39 YEARS EXPERIENCE**



**WHITNEY-JENSEN
No. 247 PRESS BRAKE**

Production shops turning out quantities of small farmings in large presses and job shops requiring a small brake, will find the No. 247 a cost reducing, space-saving piece of equipment. Capacity of the machine is 14 ga. mild steel over $\frac{3}{8}$ " 90° V die or $4\frac{1}{2}$ tons.

Strokes per minute — 47
Throat height — 11-1/2"
Throat depth — 6-1/4"

**WHITNEY METAL TOOL COMPANY
115 FORBES STREET, ROCKFORD, ILLINOIS**

essary to borrow money to pay for equipment.

You should, therefore, have a speaking acquaintance with his profit and loss statements and current depreciation rates, be able to figure interest on borrowings and show relation between this and the possible savings.

The big plant buyer may not be able to get an appropriation due to his lack of knowledge of the savings that can be made, and here I would like to point out a keynote message given by A. G. Bryant. It is about machine tools, past

and present.

"Ninety per cent of the machine tools now in use are of pre-war design and are obsolete. This should be a challenge to salesmen who think the selling of machine tools is over; 1948 models of machine tools are, on the average, at least one-third more productive than those built just prior to or during the war, while returns up to 50% can actually be proven. What greater advantage could you ask?

"We have heard a lot about the advance in machine tool prices and it seems pertinent that you should know that on the average, machine tool prices have advanced only 50% above the 1939 level, as against increases in labor rates of over 100%, in farm income of more than 200%, and in wholesale commodity prices of 111%.

Service Call: This is the fourth and final type of call and one which many of you may

not relish. It is, however, one of the most potent, if not the most potent type of call that can be made if it is handled right.

What attitude should we, as salesmen, take toward service? Should we tell our customer that we are not service men and that he will have to wait days or perhaps even weeks for a service man?

In my opinion, you can make or break a customer's confidence in you by the attitude you take. Certainly you should do everything possible to help in such a situation.

Granted you probably do not have the

YOST DRILL PRESS VISE



This new Yost vise has been designed expressly for use on drill press operations. Does away with special and costly jig fixtures.

Offered in two sizes.

Vise No.	Width of Jaw, Inches	Opens Inches	Weight Pounds
1D	3½	3½	12½
2D	5	5½	23

Do you need a vise of ANY type?

Write today for bulletins on the extensive Yost line
YOST MFG. COMPANY

1335 SO. MAIN STREET
 MEADVILLE, PENNSYLVANIA

NIELSEN Heavy Duty

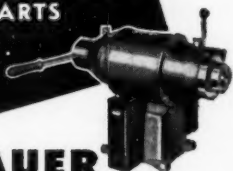
Live Centers

Write for catalog on live centers

Adapted for heavy duty work. Precision type ball and roller bearings assure maximum capacity for high speed production and long service.

NIELSEN, INC. LAWTON, MICH.

it's *Cheaper* to
POLISH • LAP • BURR
 SMALL PARTS
 with . . .



SCHAUER
speed lathes

Users report savings of from 30% to 90% in secondary finishing costs when Schauer Speed Lathes are used. Learn how you can use these low-cost, high-production machines. Save with Schauer.

Write for Catalog 480

THE SCHAUER MACHINE CO.

• ORIGINATORS OF TODAY'S SPEED LATHES
 2064 READING ROAD • CINCINNATI 2, OHIO, U.S.A.

PORTABLE ELEVATING TABLE



**Saves
 TIME
 and
 LABOR**

Eliminate heavy lifting and out handling costs. Slight foot pressure varies height up to 15½", leaving operator's hands free. Table swivels and locks in any position.

SEND TODAY FOR ILLUSTRATED CATALOG NO. 2

MIDWEST TOOL & ENG. CO.
 112 WEBSTER ST., DAYTON, OHIO



"Keeps me in a good mood—it's
the wife of my competitor"

RODNEY DE SARRO

time or the training to make major repairs or to demonstrate a machine for several days, you certainly can be interested enough to go out into the shop and study the situation carefully, make suggestions, and at the very least have a complete story to report back to your factory so that they will know exactly where they stand and what they should do next.

After a machine that you have sold is delivered, you should always call on the customer when he has had a chance to set it up, and see if it is satisfactory. Many, many times you can point out

operational features, minor adjustments, etc., that will help to get the machine started off on the right foot and the very fact that you are there, even if you do nothing, creates good will and confidence.

We could stand here the rest of the day and cite instance after instance where customers have called for a service man and the salesman in the territory called to investigate and found that a simple adjustment or the application of a little common sense solved the problem.

What does such a call accomplish?

(1) It gets the machine into service quickly.

(2) It impresses the customer with your knowledge.

(3) It gives him confidence in your ability.

(4) It teaches him to rely on you.

(5) It saves factory expense of service man.

(6) It gives factory confidence in you.

(7) It increases your knowledge.

(8) It gives you confidence in yourself.

All these and many other advantages.

Now, let's assume that you can't overcome the trouble and that some major operation is required or some part is broken. When you contact your factory by phone, letter, or wire, you can give them a first-hand account of the trouble, help them to select the right man to send, see that the necessary parts are sent, and perhaps improvise a way to use the machine until service man gets there, and so on.

End of lecture No. 25.



NEW — SURPLUS — NEW

HARGRAVE—WILLIAMS—ARMSTRONG

C-CLAMPS

No.	Cap. Inches	Make	List Price	Our Price
42	8"	HARGRAVE SUPERCLAMP FORGED	\$ 7.50 ea.	\$3.00 ea.
42	12"	HARGRAVE SUPERCLAMP FORGED	10.00 ea.	4.00 ea.
42	15"	HARGRAVE SUPERCLAMP FORGED	12.70 ea.	5.00 ea.
112	12"	WILLIAMS AGRIPPA FORGED	8.50 ea.	4.90 ea.
115	15"	WILLIAMS AGRIPPA FORGED	11.00 ea.	5.90 ea.
118	18"	WILLIAMS AGRIPPA FORGED	14.00 ea.	7.90 ea.
8	8½"	WILLIAMS VULCAN FORGED	14.00 ea.	7.90 ea.
10	10½"	WILLIAMS VULCAN FORGED	19.00 ea.	9.90 ea.
10	10½"	ARMSTRONG HVY. SER. FORGED		9.90 ea.

Guaranteed Quality — 10% discount on orders of 36 or more.

GRATIOT TOOL SUPPLY CO.

674 GRATIOT AVE.

Phone Woodward 1-9780

DETROIT 26, MICH.

25%

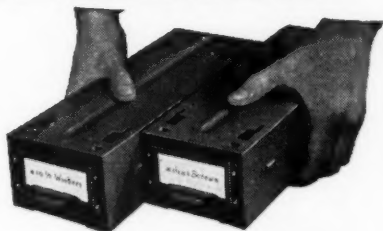
TAKE ADVANTAGE OF THIS PRICE REDUCTION

12 Large Multi Drawer Units

Size 11½" x 31½" x 3" **Now \$11.75**
deep. less than 12—99c each were \$1.29 each.

12 Small Multi Drawer Units

Size 5" x 2¾" x 2¼" **Now \$3.50**
deep. less than 12—30c each were 40c each.



Solve Your small Parts Storage Problem with All Steel Multi Drawers. Easily assembled to fit any size or shape space. Positive, Rigid Interlocking.

If your local dealer cannot supply you send your order **DIRECT** with check or money order.

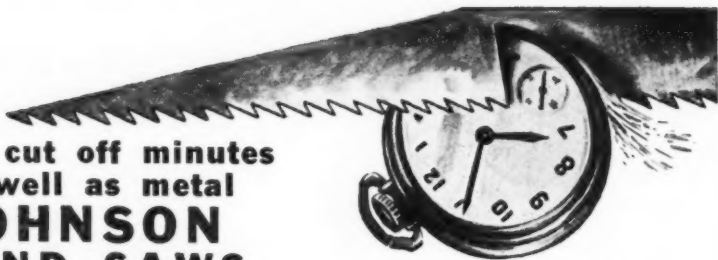
Jobber and Dealer Inquiries Invited.

THE CINCINNATI VENTILATING CO.

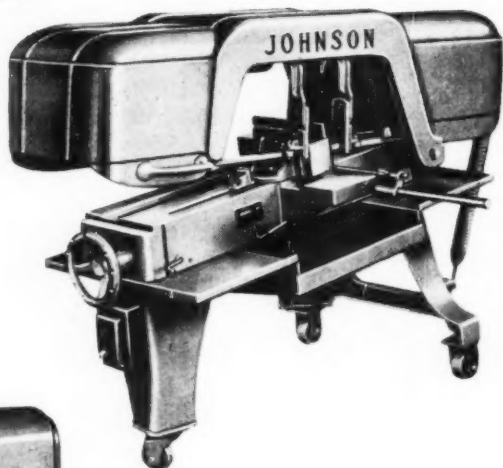
INCORPORATED
Dept. B COVINGTON, KENTUCKY

**MULTI
DRAWER**

**'They cut off minutes
as well as metal
JOHNSON
BAND SAWS**



Lock your stock in the vise, drop the saw to the work, throw the switch . . . and watch the non-stop endless blade of the JOHNSON shear down through metal for a clean, fast, accurate cut-off job . . . All controls at operator's finger-tips. Overall rigidity and extra-generous guide rolls help blades live long. Three-point suspension equalizes any floor.



TWO TYPES—Model J, (above) a heavy sturdy tool cuts 10" rounds, 18" flats. Model B, (at left) lighter, portable, of rigid twistproof construction, cuts 5" rounds, 10" flats.

Send for the descriptive bulletin today.

JOHNSON MANUFACTURING CORP.
ALBION, MICH.

News of the industry.....

CINCINNATI BICKFORD CELEBRATES DIAMOND ANNIVERSARY

Henry Bickford came to Cincinnati from New Hampshire and in 1874 in a small room at Front and Pike Streets, started to build upright drilling machines. In 1887, the business was taken over by what was then known as the Bickford Drill Company, who continued the manufacture of upright drilling machines in this same location. A few years later, the company expanded into the radial drill field. The original building at Front and Pike Streets was torn down and a four story building erected on the same site. The name of the company was changed to the Bickford Drill and Tool Company and gradually only radial drilling machines were made in this plant, the upright drilling machines being discontinued.

And thus, 75 years ago came into being another one of America's fine machine tool builders which has steadily, through good times and bad, served American industry faithfully and well.

From these humble beginnings at Front and Pike Streets what is now the Cincinnati Bickford Tool Co. emerged. Later, in 1909 the Cincinnati Machine Tool Co., manufacturers of the popular "Cincinnati" upright drilling machines, merged with the Bickford Drill and Tool Co. A

new building was erected in Oakley, a suburb of Cincinnati, which was substantially enlarged in 1919 and again in 1940.

However, not until 1925 did the products of this company become identified under the trademark name of "Super Service". The name was associated with an entirely new line of products which included the all geared and completely anti-friction bearing machines. This radial drill was the first to have all the gearing in the head of the machine and ultimately, this design lead to the centralization of control which is now accepted by all manufacturers of such equipment.

In 1947 a reorganization of the directors was necessitated by the death of August H. Tuechter, who had been connected with both the Bickford Drill Co. and the Bickford Drill and Tool Co. for well over 50 years. The reorganization in 1948 resulted in the following roster of executives: George P. Gradolf, chairman of the board and treasurer; Ozni E. Schauer, president and general manager; Neil C. Schauer, vice president and sales manager; L. Lee Schauer, vice president and chief engineer; Paul E. Heckel, secretary; C. Carleton Slete, assistant treasurer.

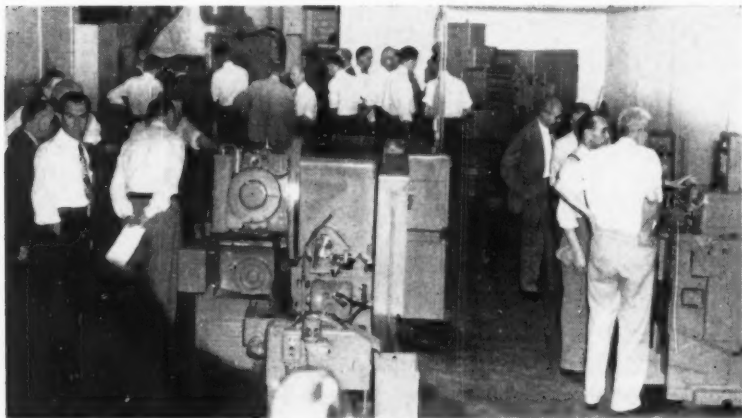
Two changes in sales office locations are announced by **The Warner & Swasey Company, Cleveland.**

The company's New England district office, in charge of Humphrey R. Ward, has been moved from the Kendall Square Building, Cambridge, Mass., to 20 Chestnut St., Needham 92, Mass., also a suburb of Boston.

The company's Buffalo office, in charge of A. Sellers, Jr., has been moved from the Iroquois Building to the Vars Building, 344 Delaware Avenue.

Sundstrand Machine Tool Co. announces the purchase of the Rockford Magnetic Products Co., located at 9th St. and 18th Ave. As a subsidiary of Sundstrand, the company will be operated under the name of Sundstrand Magnetic Products Co. and will continue in its present location the manufacture of its line of magnetic holding devices, which include standard chucks for grinders, shapers, milling machines and lathes; lifting magnets; hand separators and special holding fixtures.

SUCCESSFUL TOOL SHOW HELD BY 4 VERMONT BUILDERS



A combined machine tool show at which machine tools developed since the national machine tool show in 1947 were displayed was held in Springfield, Vt., recently. Participating companies were: Jones & Lamson Machine Co., The Fellows Gear Shaper Co., Cone Automatic Machine Co., and Bryant Chucking Grinder Co.

The Fellows Gear Shaper Co. showed a single-tooth gear shaver in which a conventional gear-shaper is carried on an adjustable spindle in cross-axes relationship with the spur gear to be finished. They also exhibited a shaper cutting U. S. Gage pinion at 600 pieces per hour.

The majority of machines were in actual operation. Bryant Chucking Grinder's No. 216 internal grinder was finish grinding the large diameter of a rough-bored connecting rod, while a Bryant cam-operated grinder was doing high

precision grinding.

Jones & Lamson's exhibit was highlighted by a showing of their 16 inch Fay automatic lathe which was producing automotive stem pinions. Twelve tools cut simultaneously at 1185 f.p.m. Floor-to-floor time was 17 seconds.

Cone Automatic Machine Co. showed, among other automatics, their 1" six spindle, model SL which ushers in Cone's entry into the smaller diameter, faster speed field. All cams are positioned free of the tooling and base areas of the machine, and permits the base support to be constructed up close to the work and tool axis. Selective feed combinations range up to 225, and between 30 and 943 work spindle revolutions.

The many machines on display met with enthusiastic reception by the guests who came from all over the country to witness the demonstrations.

WE SERVICE



Micrometers
Verniers
Gear Tooth Verniers
Adj. Snap Gauges
Indicators



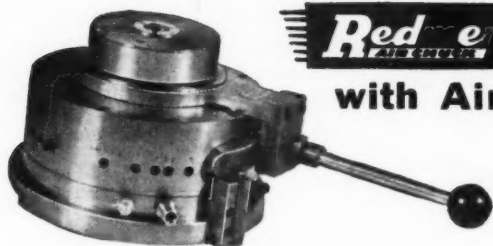
Height Gauges
Squares
Bevel Protractors
Carboloy Tipping



USING STANDARD PARTS — ONE WEEK SERVICE
ONE PURCHASE ORDER COVERS ALL MAKES

DIXON AND RYAN CO.

311 S. TROY EST. 1926 ROYAL OAK, MICHIGAN



RC-5

Redmer Index Chuck with Air Operated Collet

The REDMER INDEX CHUCK has twelve indexing positions and Collet capacity 1/16" to 2". REDMER CHUCK can be had with either Index Collets or Standard Brown & Sharpe type collets.

No. FC-28

V-29

Air Foot Control and Valve

The REDMER FOOT CONTROL & VALVE was developed in order to meet a demand for an AIR VALVE & FOOT CONTROL LOW IN COST but constructed to surpass the high priced Valves.

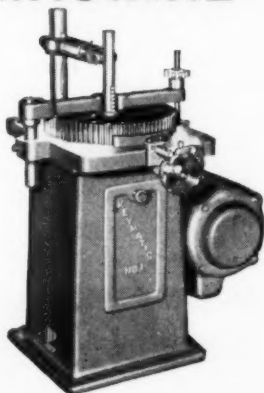


REDMER AIR DEVICE CORP.
GUNTERVILLE, ALABAMA, BOX 247

Keymatic NO. 1

KEYSEATING MACHINE

A New Keyseating Machine! New in every way . . . new in design and in ease of operation. The Keymatic has automatic centering and feed to depth. Automatic stopping, too. Quick setting . . . rapid work clamp. Cutter bars are speedily and easily changed. Work size is unlimited. Because of the automatic relief feature on the up stroke, cutters last longer. For economy in first cost and in upkeep . . . for speed and precision work, the No. 1 Keymatic is the only answer. Write today for free illustrated bulletin and prices.



KEYMATIC MACHINE CO.

P. O. BOX 1953 . . . CINCINNATI 1, OHIO

INDEX OF NEW ORDERS AND SHIPMENTS OF MACHINE TOOLS

Base—Average Shipments 1945-1946-1947=100 %

Date	New Orders (Total)	Foreign Orders (Included in Total)	Shipments (3 Mo. Average) (Centered)	Ratio: Unfilled Orders to Shipments (As Reported)
1948				
Jan.	83.1	14.0	75.3	86.9
Feb.	77.3	12.7	87.1	82.0
Mar.	86.3	16.1	83.6	84.2
Apr.	86.3	14.1	82.0	82.7
May	73.5	11.4	82.6	86.3
June	83.4	11.9	94.4	79.8
July	74.0	13.3	62.4	75.5
Aug.	73.7	13.6	69.8	72.3
Sept.	73.1	11.6	84.7	78.3
Oct.	67.4	14.0	80.4	80.4
Nov.	72.2	18.1	76.2	84.5
Dec.	76.7	16.2	96.9	80.6
1949				
Jan.	87.0	21.9	68.8	78.7
Feb.	80.9	26.5	70.3	71.6
Mar.	93.5	22.3	75.8	73.6
Apr.	70.1	23.1	74.7	74.4
May	63.7	15.8	72.8	75.5
June	p 53.8	p 15.8	p 79.0	p 3.5—1

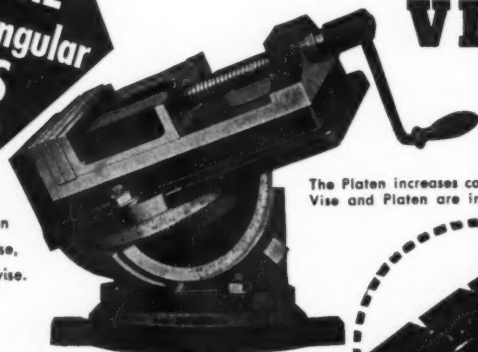
p - Preliminary figures

SAVE TIME
on intricate, angular
SET-UPS

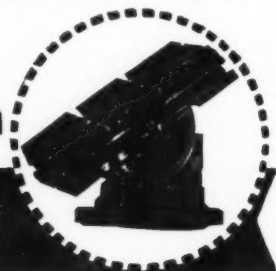
Multi-Swivel **WISE**

Fully universal . . .
three swivels simplify the
setting of compound angles.
Parts interchangeable . . . can
be used as a plain flanged vise,
a swivel vise or multi-swivel vise.

Write for
name of
nearest distributor



The Platen increases capacity of the unit.
Vise and Platen are interchangeable.



MASTER TOOL CO.

67 BATTERYMARCH ST. • BOSTON, MASS.

ABRASIVE SURFACE GRINDERS

EXCLUSIVE AGENTS

ASHEVILLE, N. C.
Tidewater Supply
Co., Inc.

ATLANTA 1, GA.
Childs, W. P.
845 Memorial Drive S. E.
P. O. Box 700

BIRMINGHAM 2, ALA.
Young & Vann Supply Co.
1725-1731 First Ave.

BOSTON 16, MASS.
Rudel Machinery Co., Inc.
532 Statler Bldg.

BUFFALO 7, N. Y.
Keller, George Machy. Co.
1807 Elmwood Ave.

CHICAGO 6, ILL.
Marshall & Huchart
Machy. Co.
571 Washington Blvd.

CINCINNATI 2, OHIO
Metch & Merryweather
Machy. Co.
First National
Bank Bldg.

CLEVELAND 13, OHIO
Metch & Merryweather
Machy. Co.

COLUMBIA, S. C.
Tidewater Supply Co.
DAYTON, OHIO
Metch & Merryweather
Machy. Co.

DETROIT 2, MICH.
1305 American Building
Cheney, G. H. &
W. H. Moreton

INDIANAPOLIS 4, I.
Marshall & Huchart
Machy. Co. of Ind.
Chamber of Commerce
Building

KANSAS CITY, MO.
Blackman & Nuetzel
Machy. Co.

KNOXVILLE 5, TENN.
Murrian, The W. S. Co.

LOS ANGELES 21, C.
Hones-Morgan
Machy. Co. Ltd.
2026 Santa Fe Ave.

MINNEAPOLIS 1, M.
Satterlee Co., The
118-120 Washington
Ave., N.

NEW ORLEANS 6, LA.
Dixie Mill Supply Co., Inc.
901 Tchoupitoulas

NEW YORK CITY 17
Rudel Machinery Co., Inc.
100 East 42nd St.

NORFOLK 1, VA.
Tidewater Supply
Co., Inc.
P. O. Box 639

OMAHA 2, NEB.
Cardinal Supply &
Mfg. Co.

PHILADELPHIA 3, PA.
Swind Machinery Co.
Broad St. Station Bldg.

PITTSBURGH 22, PA.
Metch & Merryweather
Machy. Co.
717 Liberty Ave.

ROANOKE, VA.
Tidewater Supply Co.

ROCHESTER 4, N. Y.
Keller, George Machy. Co.
509 Commerce Bldg.

SAN FRANCISCO 7, C.
Jenison Machinery Co.
20th & Tennessee Sts.

SEATTLE 4, WASH.
Hallidie Machinery Co.
2726 First Ave., S.

SHREVEPORT, LA.
Dixie Mill Supply
Co., Inc.

ST. LOUIS 8, MO.
Blackman & Nuetzel
Machy. Co.

SYRACUSE 2, N. Y.
Briggs, C. H. Mach.
Tool Co. Inc.

W. HARTFORD 7, CT.
Rudel Machinery Co., Inc.
7 South Main St.

ABRASIVE MACHINE TOOL CO.
EAST PROVIDENCE 14, R. I.

ABRASIVE

ACCURACY BOOSTS PRODUCTION



Series "E" Model 1400-E Pivot Mount

These cylinders are made to your order with any length stroke you request in any of these bore sizes:

1½, 2, 2½, 3, 4, 5, 6, 8, 10

In ordering please write mounting, bore, stroke and piston rod thread you want.

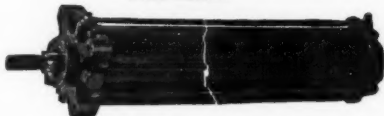


Series "E"
Model 1300
Rear Flange
Mount

Cylinders—any
bore, any stroke,
any mounting,
air, water,
hydraulic



Series "E" Model 1500
Foot Mount



Series "E" Model 1200 Front
Flange Mount

PNEUMATICS INCORPORATED

OF PLYMOUTH, INDIANA
Head Cylinder Manufacturing Department
2723 Connors Street, Port Huron, Michigan
Telephone 7181

"Job-Tested"

Trindl ARC WELDERS

**A RANGE OF MODELS FOR
EVERY WELDING JOB**

**Save Time • Reduce Costs
Increase Profits**

for PRODUCTION
• CONSTRUCTION
• MAINTENANCE
• REPAIRS

There is an easy-to-operate Trindl welder to fit every demand from small appliance repairs to heavy construction work. From 60 amp. to 360 amp. models. Prices start at \$39.50. Dependable Trindl welders, accessories and supplies are available to save you both time and money. Write, wire or phone today for catalogs and particulars.

Jobbers inquiries invited.

Write for selected distributor Plan.

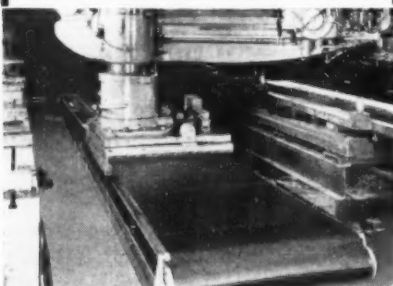


TRINDL PRODUCTS, LTD.
DEPT. BC-99

17 EAST 23rd ST., CHICAGO, 16, ILLINOIS



TOSCO WAY CURTAINS FOR MACHINE TOOL BEDS



Protects ways and screws on boring mills, lathes, grinders etc. Keeps chips and abrasive dirt out of ways and moving parts—Prolongs life of machine, saves costly repairs and overhaul time. Rollers constructed of seamless steel tube with special long life springs. Curtain is of neoprene fiberglass material impervious to oil and cutting compounds.

3 standard sizes
Special sizes to order

TOOL SUPPLY CO.
40 CUSTER DETROIT 2, MICH.

MOTOR-MICA CELEBRATES THIRTY-FIFTH BIRTHDAY

Thirty-five years ago, in 1914, Frank L. Moscow founded Scientific Lubricants Company in Chicago. Introduced to industry with the founding of this new company was the product Motor-Mica Anti-Friction Compound.



Today, thirty-five years later, Scientific Lubricants, with the same Frank Moscow at the helm, is supplying industry internationally with Motor-Mica in its fine, white powdered form. Many of America's leading names in industry have been steady customers of Scientific over the entire thirty-five year period.

The Schauer Manufacturing Corporation is the new name of the company formerly known as the Schauer Machine Company. It was announced recently in Cincinnati. A. J. Kohn, President, advised the Board of Directors that, "because of the expansion of the company's activities, it is necessary to identify it more properly so as to fully recognize its interest in the automotive and radio equipment fields as well as in the machine tool industry."

Schauer manufactures a complete line of speed lathes for finishing operations, bench grinders, battery chargers, battery eliminators, rectifiers, and automotive test instruments.

Wickes Brothers, Division of the Wickes Corporation, have just announced the opening of a factory branch office in the Detroit area, effective at once. The district manager is Joseph A. Oeming; he is located at 414 New Center Building, Detroit 2, Mich. The telephone is Madison 1419.

HERE IS A REAL TIME-SAVER!

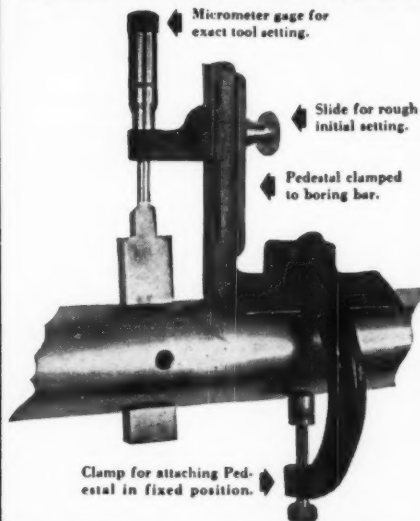
... AND WORK-SAVER, TOO!

The Bartelt Pedestal Micrometer

Enables you to set boring tools accurately from the bar diameter—eliminates common cut-and-try methods. Permits quick micrometer height measurements from flat or round surfaces. Can be used as a production-inspection tool with a wide range of settings. Ideal for jobbing shop and toolroom mechanics. Quality construction, moderately priced—sold direct-to-you by the manufacturer. All components precision machined of high grade materials and carefully assembled. Made in eight models for various applications. Write today for literature and direct-to-you prices.

BARTELT ENGINEERING CO.

1218 Partridge Ave. Beloit, Wisconsin



HIGH SPEED PRODUCTION CONTINUOUS OIL GROOVING

WICACO CONTINUOUS OIL GROOVER cuts grooves of all descriptions, internal or external, continuous or intermittent.

Send us samples for grooving. We will return them cut to specifications, with a record of time and cost estimate. No obligation.

*Ask for Descriptive Booklet
And See How You Can
Improve Your Production.*

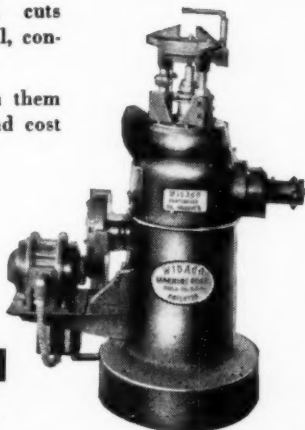
WICACO

MACHINE CORPORATION

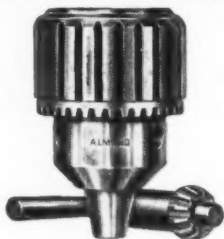
WAYNE JUNCTION, PHILA. 44, PA.

Manufacturers of Precision Machinery and Machine Parts

SINCE
1868



ALMOND DRILL CHUCKS



Maximum gripping power with
extreme accuracy and long life.

Write for Catalog

T. R. ALMOND MFG. CO.
ASHBURNHAM, MASS.
U. S. A.



Carl F. Roby, vice president of the Cincinnati Milling Machine Company, was recently elected a director. At the same time Swan E. Bergstrom, sales manager, was named vice president of the Cincinnati Milling Machine Company.



Carl F. Roby



Swan E. Bergstrom

SCHERR aids to precision — production

OPTICAL COMPARATORS
TOOLMAKER MICROSCOPES
BINOCULAR MICROSCOPES
COMPARATOR GAGES
GEAR TESTERS
HEIGHT GAGES
ILLUMINATED MAGNIFIERS
GAGE BLOCKS
VERNIER CALIPERS
MICROMETERS
TACHOMETERS
SNAP GAGES
"MAGNE-BLOX"
for magnetic chucks

BULLETINS ON REQUEST

GEO. SCHERR CO., Inc.

198 - Lafayette St. New York 12, N. Y.

F. O. Dutton has been appointed director of purchases of the E. W. Bliss Company, Toledo, it was recently made public by Louis C. Edgar, Jr., president.

G. A. Lorz has been named superintendent of operations at the Mackintosh-Hemphill Company's Garrison Plant of Pittsburg's south side. C. R. Hodgson is now superintendent of operations at the company's plant at Midland, Pa.

J. T. Sudduth, Birmingham, Ala., has been appointed sales representative for C. A. Norgren Co., Denver, according to J. M. Evans, sales manager of the firm.

J. G. Schaefer has been named manager of Allis-Chalmers recently converted Youngstown, Ohio district office. Formerly a branch office, it has now been moved to the Ohio Edison Building.

The appointment of V. E. Lawford as sales representative in the Northern California territory has been announced by the Buckeye Tools Corporation, Dayton, Ohio.

Appointment of **Harry R. Reynolds** as consulting engineer, and **Howell L. Potter** as his successor in the position of chief engineer has been announced by vice president **F. Leister**, of the **Fafnir Bearing Company**, New Britain, Conn.

The **Bound Brook Oil-Less Bearing Company**, Bound Brook, N. J., announces the election of officers as follows: **W. F. Jennings**, president and treasurer; **H. O. Johnson**, executive vice president and secretary; **George O. Smalley**, vice president; **W. R. Toeplitz**, vice president in charge of engineering research; **Wm. T. Allen**, assistant secretary; and **G. R. Brokaw**, assistant treasurer.

John K. Hodnette, vice president and general manager of industrial products for the **Westinghouse Electric Corporation**, Pittsburgh, has announced the appointment of three key executives: **Tomlinson Fort**, manager, apparatus sales department; **William W. Sproul**, sales manager, industrial products; **Royal C. Bergvall**, engineering manager, industrial products.

George W. Binns and **Lester F. Nenninger** were elected vice presidents and directors of **Cincinnati Milling and Grinding Machines, Inc.**, sales subsidiary of the **Cincinnati Milling Machine Company**.



George W. Binns



Lester F. Nenninger

Francis K. McCune, assistant to the general manager of the **General Electric Company's Apparatus Department**, Schenectady, N.Y., has been appointed assistant general manager of the **G-E Nucleonics Department**, Richland, Wash., site of the **Hanford Works** for the **Atomic Energy Commission**.

EXPEDITE FINISHING OPERATIONS

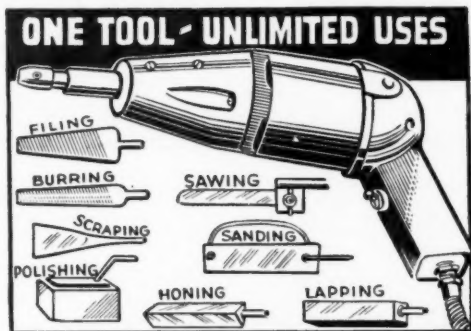
with

RECIPROCATING ACTION TOOLS

Portable — Light in Weight

Easy to Use — A real Time

Saver in any Shop



Many hand finishing operations can now be done quicker, easier and more accurately with these electric tools. Deliver 1000 PUSH-PULL strokes per minute. Fixed strokes are either $\frac{1}{8}$ " or $\frac{3}{8}$ " long. Operate on 110 Volts AC or DC.

Write for Catalog

ACME TOOL COMPANY

71 WEST BROADWAY

NEW YORK 7, N. Y.

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

183



TYPE HOLDERS AND TYPE ROLL MARKERS
HAND STAMPS LOGOTYPES DIES STANDARD
AND SPECIAL STAMPS INSPECTOR'S STAMPS
MACHINE ENGRAVING PRECISION DUPLICATING

NEW METHOD STEEL STAMPS, Inc.
149 Joseph Campau, Detroit 7, U.S.A.

RIDERMIKROKATOR

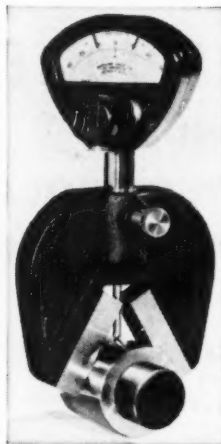
... for OUTSIDE MEASUREMENTS

The Ridermikrokator is intended for checking out-of-roundness and diameters of cylindrical parts. As the measurements are carried out according to the three point principle the instrument can be used to good advantage for checking centerless-ground pieces.

They are provided with hardened, ground and lapped anvils and insulating grips. The measuring surfaces of the anvils can be tipped with cemented carbide. Price on application.

This instrument is supplied with removable measuring points with ranges from $3/16"$ to $4\frac{3}{4}"$.

PRICES AND LITERATURE UPON APPLICATION



Setting Ridermikrokator by means of a master.

SWEDISH GAGE CO., OF AMERICA
8900 ALPINE AVE., DETROIT 4, MICH.

Emil Buban has been appointed factory superintendent of Detroit Harvester Company, according to an announcement made by J. B. Ellsworth, vice president.

Organization changes made recently by The Baker-Raulang Company's Industrial Truck Division, Cleveland, include E. H. Remde, formerly works manager, to the newly created post of advisor to the president on engineering and manufacturing; H. A. Schultz, formerly superintendent, to manufacturing engineer; and I. L. Young to the position of general superintendent.

General Brehon Somervell, president of Koppers Company, Inc., was elected a member of the board of directors of The Carborundum Company, Niagara Falls, N.Y., at a recent board meeting, H. K. Clark, company president announced.

H. E. Heywood, Jr., has been appointed assistant chief engineer of the Toledo, Ohio, plant of The National Supply Company, according to an announcement by J. R. Mahan, director of engineering for the company.

NOTCHING TUBING OR PIPE ENDS EASILY WITH

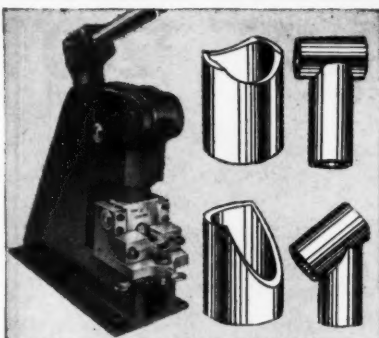
ARC-FIT

Patent No. 2,128,519

IN POWER PRESS OR HAND PRESS

Arc-Fit is a notching unit for preparing pipe or tubing ends in making welded or brazed tubular joints. Arc-Fit will prepare the ends of a pipe or tube in less than 5 seconds. Arc-Fit is a production tool that will cut your production costs. It is applicable in any industry where pipe or tubular construction is used.

- Arc-Fit can be utilized in any power press.
- Arc-Fit can be furnished for any size tubing or pipe.
- A hand press can be supplied with Arc-Fit units for shearing pipe or tubing sizes 2 inches or under.



- For sizes over 2", angular cuts other than 90°, and slotting operations. Quotation furnished on request.
- Arc-Fit does not deform pipe or tube. No grinding or finishing operation is needed.
- Engineers can now design for tubular construction and cut costs.

Write today for circular and prices.

Manufactured Exclusively by

VOGEL TOOL & DIE CORPORATION

2525 Moffat Street

Chicago 47, Illinois

WHERE **DEPENDABILITY** IS A MUST

MARSHALLTOWN

THROATLESS SHEARS ARE YOUR LOGICAL CHOICE

Cuts any shape—quick! Saves time, money—boosts production. Cutting speed 6' to 9' per minute.

Write for details

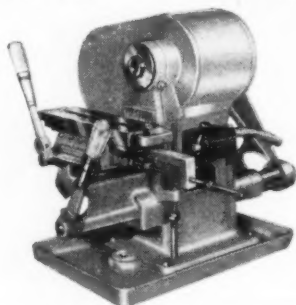


MARSHALLTOWN MFG. CO.

910 E. Nevada St. Marshalltown, Iowa

**THIS BURKE
BENCH MILLER**
COSTS only

\$240
(less motor)



It's the little Miller with the big reputation for accurate work. For production, tool rooms, schools, hobbyists. Send for catalogue of hand and power feed models.

The BURKE MACHINE TOOL CO.
A Division of U. S. Burke Machine Tool Co.
20 East 72nd St. Cincinnati 16, Ohio

PUNCHES and DIES



for
All Makes of
Hand, Foot, and
Power Machines

A large range of round, flat, square, and oval sizes is carried in New York stock.

Special Tools and Odd
Sizes Made to Order

Circulars covering our line of metal-working tools available.

T. H. LEWTHWAITE MACHINE CO.
312 East 47th St., New York 17, N. Y.



Universal Stock Reel

The Humm Universal Stock Reel is an essential device for the handling and feeding of coil stock to Power Presses.

1. Adjustable Reel to fit various sizes of coil.
 2. Reel is adjustable to suit height of Press.
 3. Reel can be inclined to any position.
- Stock Reel with plain bearing \$55.00
Stock Reel with roller bearing \$65.00

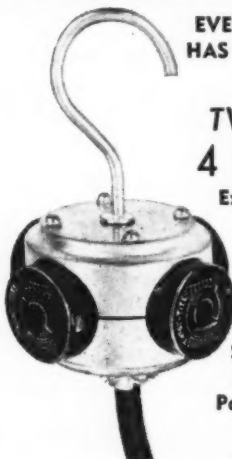
Manufactured By

John Humm Safety Equipment Co.
253 SHEFFIELD AVE., BROOKLYN 7, N. Y.

SOMETHING NEW

EVERY MECHANIC
HAS BEEN WAITING
FOR

**TWIST TITE
4 OUTLET**
Extension Cords



Insert Plug
Turn to Right
& It Stays Tight

Send For Catalog
Extension Lights,
Parts, Incandescent
Lamps

SAVE LAMP SUPPLY CO.
BALTIMORE 11, MD.

Dependable MEASURING & CHECKING EQUIPMENT

and Now

HAND WHEELS, KNOBS, HANDLES

Cadmium Plated

Non-rusting — good looking



STRAIGHT and OFFSET TYPE



CAST IRON

We also build jigs, fixtures, special tools and machinery. Send us your blueprints.

SOLID MACHINE HANDLES



MALLEABLE IRON

READY TO DELIVER



BOX PARALLELS

In 13 sizes, ranging from 3 x 4 x 12 and up.

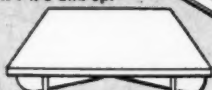
SLOTTED ANGLES

In 19 sizes, ranging from 4 x 9 x 5 and up.



UNIVERSAL ANGLES

In 10 sizes, ranging from 4 x 3 3/4 x 5 and up.



SURFACE PLATES

Over 30 sizes, ranging from 7 x 7 1/2 to 96 x 192.

Send for Complete Catalog

MACHINE PRODUCTS CORPORATION

6771 E. McNICHOLS ROAD

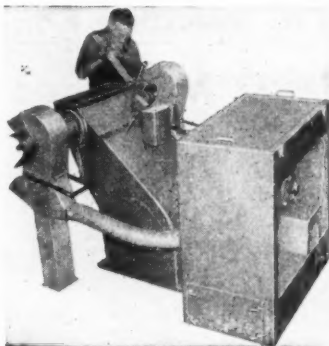
DETROIT 12, MICHIGAN

STOP DUSTS with DUSTKOPS

Low Cost, Efficient, compact. For recirculating cleaned air or for outside exhaust (toxic or objectionable fumes). Twelve models (314 to 3600 cfm), to collect dust

from: grinding, buffing, polishing, sanding, wire brushing, bagging, blast cleaning, trimming, woodworking, etc.

Model 1150 — 1400 cfm — always the best choice for Hammond VRO Polisher.

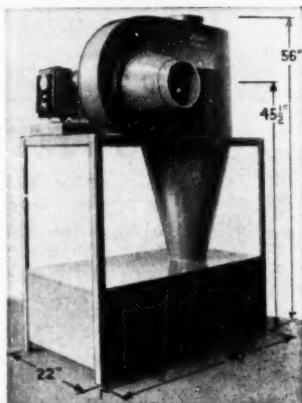


For recommendation by return mail, describe dust problem. No obligation. New Catalog 605 now ready.

AGET-DETROIT CO.

205 Main at Washington Sts.
Ann Arbor, Michigan

Model 20N30 — 2300 cfm — exhausts cleaned air outdoors.



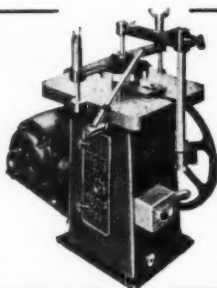
NO BUSHINGS, GUIDES or PILOTS NEEDED!

THE READING BROACH KEYSEATER

The Reading Bench Machine requires no bushings, guides or pilots. No other machine like it. Very fast—capacity from $\frac{1}{8}$ to $\frac{3}{4}$ cutter.

Low first cost—prompt delivery.

READING MACHINE COMPANY, Reading (Cincinnati), Ohio



For over 30 years the leader in the field

**OPERATOR
CAN TEND
4 TO 8
MACHINES**

HIGH SPEED SHAVER, equipped with automatic feed hopper, handles most types of headed parts. Greater flexibility, speed, precision for secondary operations. WRITE FOR FULL INFORMATION giving your specifications.

THE H. P. TOWNSEND MFG. CO.

99 BROOK STREET, ELMWOOD, CONN.

Manufacturers of Riveting and Screw Machines



MIGHTY

MIDGET
\$29⁰⁰

Less Diamond



RADIUS DRESSER

PUT ONE ON EVERY SURFACE GRINDER

Hardened Shaft. Bearing Adjustable for Wear. Diamond Always Clamped Perfectly in Place. Order Direct on 10 Day Money Back Guarantee.

10" Wheel Size for DoAll or Norton—\$35.00, less Diamond

SPERMAN METAL SPECIALTIES 2199 E. 21st ST., BROOKLYN 29, N. Y.

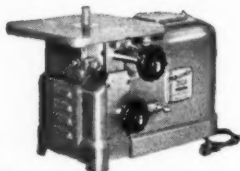
You NEED these TWO Machines



- The MILWAUKEE DIE FILER for straight-line, sharp-corner filing, sawing and lapping.
- The MILWAUKEE PROFILE GRINDER for high speed, precision grinding of curved and irregular contours.

RICE PUMP & MACHINE CO.

Division of Milwaukee Chaplet & Mfg. Co.
1027 S. 40th ST. MILWAUKEE 4, WIS.



MILWAUKEE **DIE FILERS**
PROFILE GRINDERS

*Write for
Bulletins*

EISLER TRANSFORMERS

For Every Class of Service
STANDARD AND SPECIAL



We manufacture all types of transformers, sizes from 1/4 to 500 KVA. Air, oil, or water cooled for distribution, lighting, welding, furnace, phase changing rectifiers, auto, etc.

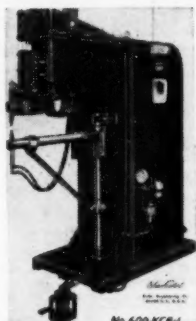
Special transformers built to Customers Specifications.
EISLER Transformers conform strictly to NEMA, ASA and AIEE standards.



EISLER WELDERS SPOT BUTT GUN ARC

For all types of welding in sizes: 1/4 to 300 KVA. Foot, air or motor operated.

We invite contract spot or butt welding in large or small quantities.



Air operated Press Type Spot Welders (made from 5 to 250 KVA)

EISLER ENGINEERING CO., INC.

762 South 13th St., (Near Avon Ave.)

Chas. Eisler, Pres.

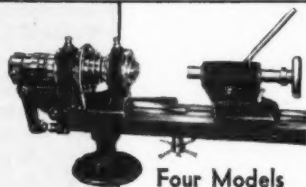
Newark 3, N. J.

LATHES
MICROMILLS
ATTACHMENTS
COLLETS

DERBYSHIRE

Fine Precision Instrument

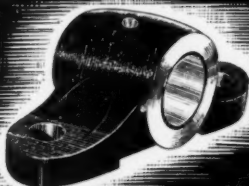
LATHES



Four Models
Collet Capacity
.196" to .315"

F. W. DERBYSHIRE, INC.
Waltham 54, Massachusetts

PRECISION



POROUS BRONZE BEARING PILLOW BLOCKS

• Accurately machined from finest grey iron castings available, this block contains an oil-impregnated, porous bronze bushing — "the bearing with a million oil wells". Designed for installation from specifications, the PRECISION blocks runs indefinitely with no oil drip. For a rugged pillow block with long, trouble-free life, turn to PRECISION.

PRECISION PRODUCTS Co.

DIVISION of ATLANTA TOOL CO.
290 SIMPSON ST., N.W. ATLANTA, GA.



EISLER TRANSFORMERS

For Every Class of Service
STANDARD AND SPECIAL

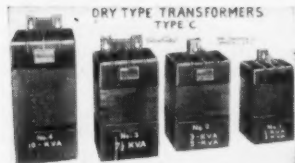
SMALL PHASE TRANSFORMER COOLED



We manufacture all types of transformers, sizes from 1/4 to 500 KVA. Air, oil, or water cooled for distribution, lighting, welding, furnace, phase changing rectifiers, auto, etc.

Special transformers built to Customers Specifications.
EISLER Transformers conform strictly to NEMA, ASA and AIEE standards.

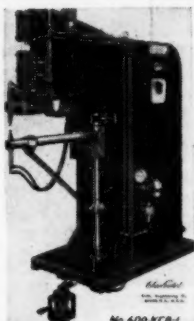
DRY TYPE TRANSFORMERS TYPE C



EISLER WELDERS SPOT BUTT GUN ARC

For all types of welding in sizes: 1/4 to 300 KVA. Foot, air or motor operated.

We invite contract spot or butt welding in large or small quantities.



No. 600 KVA-1

Air operated Press Type Spot Welders (made from 5 to 250 KVA)

EISLER ENGINEERING CO., INC.

762 South 13th St., (Near Avon Ave.)

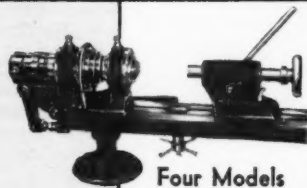
Chas. Eisler, Pres.

Newark 3, N. J.

LATHES
MICROMILLS
ATTACHMENTS
COLLETS

DERBYSHIRE

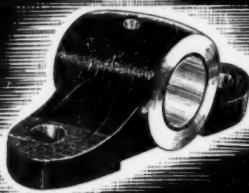
Fine Precision Instrument LATHES



Four Models
Collet Capacity
.196" to .315"

F. W. DERBYSHIRE, INC.
Waltham 54, Massachusetts

PRECISION



POROUS BRONZE BEARING PILLOW BLOCKS

• Accurately machined from finest grey iron castings available, this block contains an oil-impregnated, porous bronze bushing — "the bearing with a million oil wells". Designed for installation from specifications, the PRECISION blocks runs indefinitely with no oil drip. For a rugged pillow block with long, trouble-free life, turn to PRECISION.

PRECISION PRODUCTS Co.

DIVISION of ATLANTA TOOL CO.
290 SIMPSON ST., N.W. ATLANTA, GA.

Learning
Your
Clutch
Needs

Analysing the
Problem

Designing the
Clutch

Planning
Production

Tooling Up

Manufacturing

Checking and
Testing

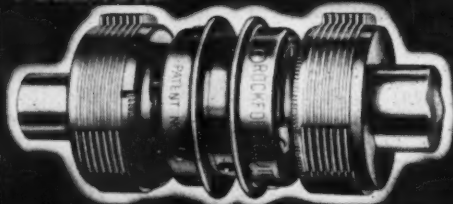
Supervising
Installation

Servicing



**Better CLUTCH Design
Benefits PRODUCT Design**

PULLMORE



MULTIPLE-DISC

ROCKFORD

CLUTCHES

Fitting the clutch to the product — instead of the product to the clutch — requires that the clutch be designed, manufactured and applied to meet the product's specific needs. Before you approve the design for your next model — double check to see if it includes all the improvements you can give it — with the *right* ROCKFORD CLUTCH application. You are invited to utilize the clutch "know-how" of our engineers to give your design the technical clutch advancements that will provide your product with important competitive advantages.

ROCKFORD CLUTCH DIVISION

BORG-WARNER

300 Catherine Street, Rockford, Illinois

Automotive
and Aircraft

Trucks and
Buses

Tractors and
Road Machines

Farm Machines
and Implements

Oil Field
Rigs and Pumps

Industrial

Mowers
and Light
Machines

Engines and
Marine
Units

Machine Tools
Production Units



Available Literature

CATALOGS, BOOKS AND INDUSTRIAL FILMS

Self-lubricating Bearing Materials for experimental, emergency, and small lot bearing requirements are discussed in catalog No. 102. Included are listings of solid and cored bars in all sizes up to 12" in length and 2½" in diameter, and 6" x 18" plates ½" to 1" thick. Specifications and sizes of finished, self-lubricating, powdered metal bearings. **The Wel-Met Company, 110 Gouglar Ave., Kent, Ohio.**

Firth Sterling Steel and Carbide Corps'. Catalog Section 60-010, covers specifications, data and list prices on standard, modified standard, semi-standard and modified semi-standard Firthite tips and blanks. There are 14 pages in all, showing prices and items stocked for all grades and sizes of Firthite tips and blanks. **Firth Sterling Steel & Carbide Corp., McKeesport, Pa.**

Lima Gearshift Drives are used for selective speed machine operation; Lima Electric Motors and Lima Pedestal Grinders; Buffing and Polishing Lathes. Bulletin contains complete type and gear ratio information on the Lima Drives and frame sizes and styles of Lima Electric Motors. It also contains specific information on Lima Pedestal Grinders; Buffing and polishing Lathes. **The Lima Electric Motor Company, Lima, Ohio**

New Chuck Catalog, No. 64, of hand operated chucks, covers all sizes and styles of 4 jaw Independent Chucks, 3- and 4-jaw Self Centering, 3- and 4-jaw Combination Chucks, 2-jaw Chucks and Collet Chucks. Photographs and engineering drawings, dimensions, weights and price lists, make this catalog an engineering manual for all current types of hand operated chucks. **The Cushman Chuck Company, Hartford 2, Conn.**

Precision Boring Machines are built in two sizes of two models—one for straight boring and turning and the other with an additional slide for contour work as well. They are cam actuated for continuous accuracy and all work is done with single point boring tools. They are particularly well adapted to second operation work where accuracy and finish is required. Specifications, photos. **New Britain-Gridley Machine Division, The New Britain Machine Company, New Britain, Conn.**

Aircraft Steels—New 64-page booklet contains descriptions and lists sizes, weights, lengths and extras of carbon, alloy and stainless grades of aircraft quality steel available for immediate shipment from stock. Another helpful feature of the booklet is the condensed listing of AN-QQ, Federal QQ, and AN and AMS Specifications pertaining to steel. Aircraft Steels booklet may be secured from **Joseph T. Ryerson & Son, Inc., Box 8000-A Chicago 80, Ill.**

Keller Power Hack Saws are shown in new bulletin. Bulletin features the new adjustable feed control that has been designed into the Model C Hy-Duty Keller Saw. This feature speeds cutting for each kind of material being cut from thin wall tubing to heavy 6¼"x6¼" bars. **Sales Service Machine Tool Co., 2363 University Ave., St. Paul, Minn.**

Roller Thrust Bearings, ball thrust bearings, step bearings, journal roller bearings, and special bearings are discussed in catalog No. 25. The various types are well illustrated and standard sizes listed in tabulated form. **The Gwilliam Co., 360 Furman St., Brooklyn 2, N. Y.**

New Lathe Attachment Catalog. More than one hundred and thirty different attachments and accessories for South Bend Lathes and Drill Presses are illustrated and priced in this new 28 page, 8½" x 11" Catalog 77-U. Many new items are cataloged, including some recently developed attachments not previously announced. Although these attachments and accessories are designed primarily for use on South Bend Machine Tools, many of them can be easily adapted to other makes. A copy of Attachment and Accessory Catalog No. 77-U will be mailed on request, from **South Bend Lathe Works, 384 East Madison Street, South Bend 22, Ind.**

Hydraulic Surface Grinders perform super-precision flat grinding, shoulder grinding and form grinding operations. Their flexibility and adaptability for a large variety of work is explained by picturing the construction of these grinders. This precision construction permits the grinders to deliver any pre-determined precision for finish, flatness, size and parallelism—also squareness and parallelism when using the sides of the wheel. The 8 page catalog is available from **The DoAll Co., DesPlaines, Ill.**

Guide to Economical, Durable Flooring. Pictures and copy, in new folder, describe how aircraft, railroad, marine and other industries are meeting floor repair and resurfacing problems with "Ruggedwear" applied over concrete, brick, stone, composition, steel or wood floors. Chart shows standard mixes. Write **Flexrock Co., 3634 Filbert Street, Philadelphia 4, Pa.**

Fuses, etc. Broadside No. 300-A shows thirteen ways to step up production and cut maintenance costs. Catalog describes in detail Trico fuses, fuse clip clamps, test clamps, fuse pullers, lubrication devices, etc. Free copy is available from **Trico Fuse Mfg. Co., 2948 North 5th Street, Milwaukee 12, Wis.**

Cemented Carbide Drills have polished flutes to facilitate chip flow when drilling abrasive non-ferrous materials and plastics. Included is the Ace Hi-Brinell Drill for drilling hardened steel. Recent design changes have increased the rigidity and improved the cutting action of these drills. Additional sizes now provide a range from ⅛" to ¾" diameters. Ace masonry drills, at new low prices, are also listed. Catalog No. 106. **Ace Drill Corporation, Detroit 26, Mich.**

ACE—SETS THE PACE

**A.S.A. Standard
Drill Jig Bushings**



- OVER ½ MILLION IN STOCK • FASTEST SERVICE ON SPECIALS
- SUPER FINISHES—LONGER WEAR—Immediate Delivery on Standards

AND NOW . . . NEW LOW PRICES

and a new pricing policy THAT SAVES YOU MONEY!
WIRE, WRITE OR PHONE YOUR ORDER TODAY —

ACE DRILL BUSHING CO.

5400 FOUNTAIN AVENUE

LOS ANGELES 27, CALIFORNIA

Distributors Coast to Coast

TO EJECT
LUBRICANT
SQUEEZE
BOTTLE



Packed in Shatterproof unbreakable Plastic Bottles. With "Shaw" Patented Dispenser Top

Write For Further Information, Sample and Prices.

MOLY-LUBE PRODUCTS

15 Park Row New York 7, N. Y.

New Dry Lubricant

FOR

- High Pressures
- High Temperatures
- High Velocities
- Anti Galling
- Anti Seizing
- Low Friction Coefficient
- Extremely Difficult Lubricating Problems

Abart SPEED REDUCERS

- Quiet, Efficient Operation
- Economical First Cost
- Long Trouble-free Life

Over 75 types and sizes, 1/50 to 417 h.p. in spur, worm or combinations. Write today for large Abart data catalog, full engineering details, drawings, etc.



Type "A"
1/2 to 98 h.p.
horizontal top
worm

SEND FOR FACTS
TODAY.

ABART GEAR & MACHINE CO.
MANUFACTURERS OF ABART SPEED REDUCERS

4832 W. 16th St.

Chicago 50, Ill.

OUR EFFICIENT TOOL DESIGNING

means

*better production
at a lower cost*

Efficient tool designing in post-war's competitive production is a "must". Our experience guarantees you tools — designed for economy of operation, resulting in your increased production at lower costs.

**COLUMBUS DIE • TOOL
and Machine Co.**

930 CLEVELAND AVE., COLUMBUS 1 OHIO

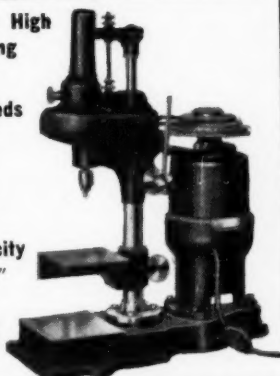
YOU CAN ACTUALLY FEEL THE PRECISE OPERATION

Model R-53 High
Speed Drilling
Machine

Spindle Speeds
750 RPM
1500 RPM
3000 RPM
6000 RPM

Chuck Capacity
No. 80 to 1/4"

WRITE FOR
DETAILS

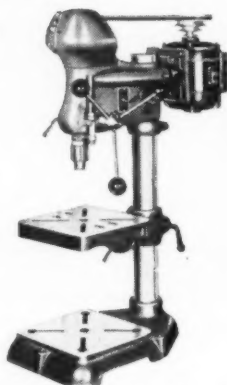


High Speed Hammer Company, Inc.
311 NORTON ST.
ROCHESTER 5, NEW YORK

famco OFFERS A COMPLETE LINE OF 15" DRILL PRESSES

**Today's Best
Drill Press
Value**

No. 80 Single Spindle, Tilting Table, Bench Model (shown with motor). Famco Drill Presses are available in a complete line of single and multiple spindle models, bench and floor types.



Here Are a Few of the Many Famco Features:

- Heaviest machine in the price field.
- Precision machined throughout.
- Extra-large (2-3/64") quill (largest in price field); greater rigidity, accuracy.
- Extra-long (4 1/2") stroke with shorter spindle means greater bearing support.
- No. 70 to 3/8" Jacobs Chuck or No. 1 Morse Taper.
- Four sealed-for-life ball bearings.
- Full-tilting, precision-ground table.
- Quick release motor bracket mounting (furnished as standard equipment) permits belt changes without moving motor.
- Easily adjustable feed tension control.
- Six spline spindle provides constant power and greater rigidity.

Write for new catalog just released!

FAMCO MACHINE CO.

1320 18TH ST. • RACINE, WISCONSIN

famco COST CUTTING **machines**

ARBOR PRESSES • DRILL PRESSES • POWER PRESSES
FOOT PRESSES • POWER AND FOOT SQUARING
SHEARS

USE ECONOMY

Headless
Set
Screws

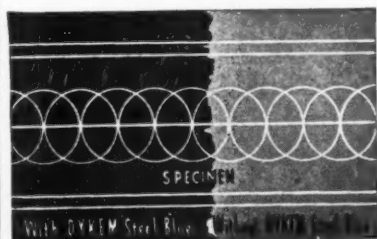


Socket
Set Screws

Try Them On Your Next Job!

**ECONOMY
MACHINE PRODUCTS
COMPANY**

5212 Lawrence Ave., Chicago 30, Ill.



**DYKEM STEEL BLUE
STOPS LOSSES
making dies & templates**

Simply brush on, right at the bench; ready for the layout in a few minutes. The dark blue background makes the scribed layout lines show up in sharp relief, and at the same time prevents metal glare. Increases efficiency and accuracy.

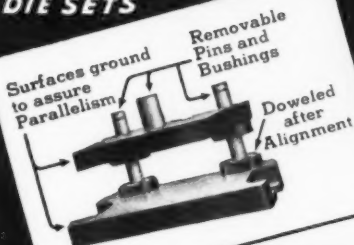
Write for full information.

THE DYKEM COMPANY

2301G North 11th St., St. Louis, Mo.
In Canada: 2408 Dundas St. West, Toronto, Ont.

BAUMBACH

THE FIRST IN
DIE SETS



Being originators of Standard Die Sets naturally we are steps ahead in Design—Precision—Dependability and Economy. Baumbach Die Sets can be disassembled. The Leader Pins and Bushings can be used on other size Die Sets—reducing inventorying a lot of Die Sets. Costly machining time is also reduced. Learn all about Baumbach advantages before you buy. Write for circular.

E. A. BAUMBACH MFG. CO.
1817 S. Kilbourn Ave. • Chicago 23, Ill.

Only \$29⁵⁰ prepaid
MONEY BACK GUARANTEE



WAR SURPLUS SURFACE PLATES

BRAND NEW Precision surface plates. Finest quality Hand Scraped. Manufactured by CHALLENGE MACHINERY CO. Original factory packing. 12"x18" with 1/4" thick plate. 3" ribs. Complete with durable wooden protective cover and wooden handles. Made to strict Gov't. specifications. A buy you can't afford to miss!

10 DAYS TO RATED ACCOUNTS
ORDER BY MAIL
SEND CHECK OR MONEY ORDER.

ASSOCIATED TRADERS, INC.
255 Kalamoth St., Denver, Colorado

WANT A
FASTER CUTTING
LONGER LASTING BLADE?
STAR MAKES IT!

No matter what type material you're cutting... metal, or non-metallic... you'll find Star blades cut it cleaner, faster... give longer, more economical service. That's because Star blades are made of the finest high grade steel, heat treated for extra blade strength. Teeth are precision-set to assure fast cutting and full side clearance. These Star features mean fewer "time-outs" on the job... greater cutting economy for you. And the Star line is complete. There's a Star blade designed for every cutting job a hack saw or band saw can do.

Next time your supplier calls ask him for a free copy of Star's booklet, "Metal Cutting", and the new Star Wall Chart. Both are packed full of valuable information on the selection, use and care of hack saw equipment.



CLEMSON

BROS., INC. • Middletown, N. Y.

Makers of hand and power hack saw blades, frames, metal cutting band saw blades and the Clemson Lawn Machine.

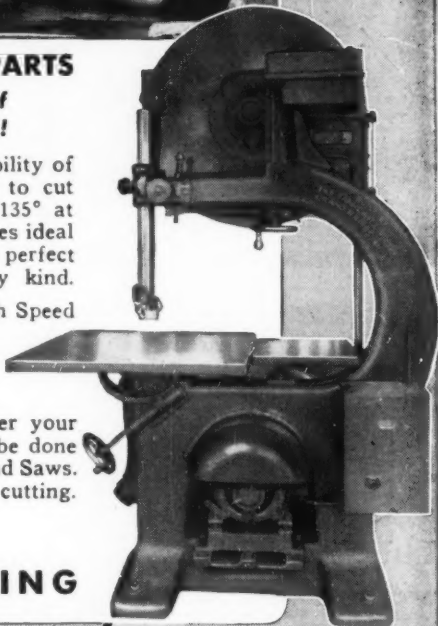
The SUPER METHOD



of TRIMMING FORMED PARTS and performing a host of other metal cutting jobs!

The negligible down-drag and the ability of Tannewitz High Speed Band Saws to cut sheet metal from 90° to near 0 or 135° at tremendous speed make these machines ideal for trimming. Cuts can be made with perfect safety without using a rest of any kind.

Friction sawing with Tannewitz High Speed Band Saws also results in perfectly amazing time savings in the cutting of flat sheets, soft or hardened steels, armor plate, plastics, glass and many other materials. Whatever your cutting problem, chances are it can be done better and faster with Tannewitz Band Saws. Investigate this "Super" method of cutting.



FRICTION SAWING

with
Tannewitz

**Write for Your
Free Copy**

HIGH SPEED BAND SAWS

THE TANNEWITZ WORKS **GRAND RAPIDS**
4, MICHIGAN

Shop Hints

UNUSUAL USE OF FORMING MACHINE SOLVES HEATER PRODUCTION PROBLEM

Attractive and artistic exterior designs for home appliances which can add much to the appearance and subsequent saleability of the merchandise, often present difficult tooling and manufacturing problems. One such problem, which was solved by the application of a remarkably simple and effective machine, was the forming of the outside casing or shell for the Westinghouse Electric Home Heaters, figure 1.

This casing is actually in three sections: two identical end pieces and a center piece. The end pieces are relatively simple to form in drawing dies. The center piece, however, is heavily perforated and varying in width. Its edges must be off-set to make a proper lap joint with the end pieces. Also, the sheet must be formed to fit the edge of the end pieces.

If the edges were made first on a break type of machine, as would ordinarily be done, the edges would distort and flatten during the subsequent curving. If the sheet were first curved on a forming machine, then the edges put in, the risk of distorting the entire formed curve would be encountered. With a highly perforated sheet this would be a risky and slow procedure.

Some means had to be devised to do both operations, however dissimilar, at the same time. It was devised after consideration of the various possible ways of forming these center pieces.

The two oval-shaped end plates mounted on the lower shaft of the machine are made so as to overbend the sheet on the shorter radius to allow for spring-back. These plates have the off-set milled into their rims, and guide strips at their outer edges to confine the sheet, figure 2. These end plates are adjustable along the shaft with proper spacers to accommodate various sheet widths.

The upper shaft is provided with vertical travel to permit it to follow the

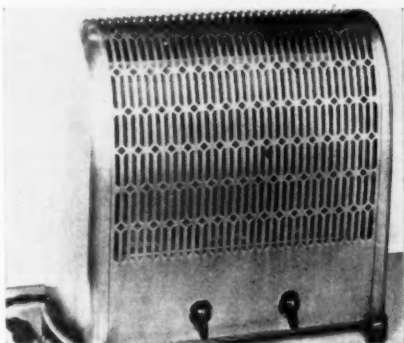
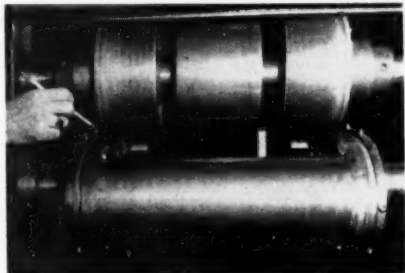


Figure 1. The electric home heater. The problem was to form its outside casing, or shell.

• • •

Figure 2. The two oval-shaped end plates mounted on the lower shaft of this machine, used to form the cases, have the off-set milled into their rims, and guide strips at their outer edges. These end plates are adjustable along the shaft with proper spacers to accommodate various sheet widths.



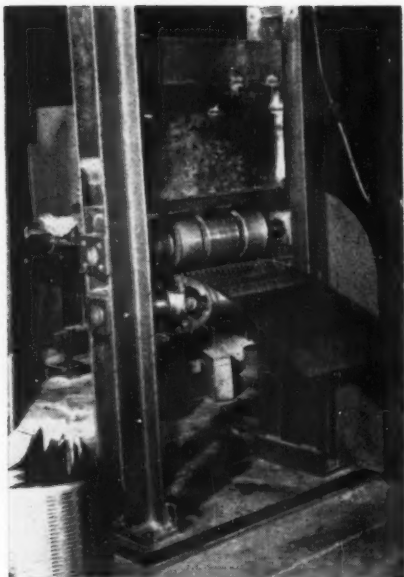


Figure 3. Shown starting through the machine, the outside casing has its edges off-set and is formed so that it can be fitted perfectly into its end piece. The operator has pushbutton control of the machine.

contour of the lower plates which move it against a dead weight. This shaft carries two end rollers having off-set rims to match the off-set in the lower plates, and proper spacers between these rolls. When the lower shaft is turned the rollers on the upper shaft follow the contour of the end plates exerting a fairly constant pressure throughout the revolution.

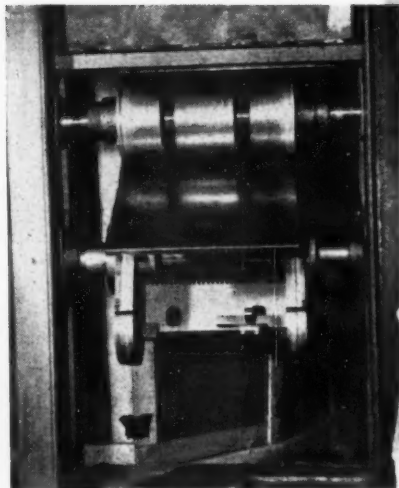


Fig. 4. The outside casing is nearly ready to be removed from the forming machine.

When a sheet is rolled through this machine, the edges are off-set and the sheet is formed so that it can be fitted perfectly into the end pieces. A sheet is shown starting through the machine, figure 3, and is seen almost completely formed, figure 4. The operator has push-button control of the machine to stop it at the end of the forming cycle where the formed sheet is removed and an un-formed sheet is put in place for forming. Formed sheets are shown in the left foreground of figure 3.

This machine is simple and compact. The time required to pass through the forming cycle is less than one minute, which provides ample productive capacity. It does its complicated special job perfectly.

"NIROL" NEEDLE BEARING LIVE CENTER

Designed for heavy loads and precision work. Minimum overhang of center avoids vibration and chatter. Heavy, powerful spring compensates for any expansion of work due to heating during machining. Compact, neat, and rugged. Used for high speeds or heavy roughing cuts.

Furnished in Morse Taper Sizes

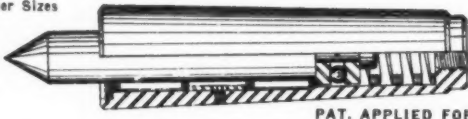
No. 1 M.T.—\$ 15.25

No. 2 M.T.— 21.75

No. 3 M.T.— 26.75

No. 4 M.T.— 32.50

No. 5 M.T.— 49.75



No. 6 M.T.—\$ 87.50

No. 7 M.T.— 110.00

Bullnose and female center inserts available in sizes listed.

L. F. TREICHLER—PRECISION GRINDING

900 Route 29, North Plainfield, N. J.

LOW COST LOCATING BY CENTER SCOPE

*Dependable
Accuracy.*

Ample Adjustment

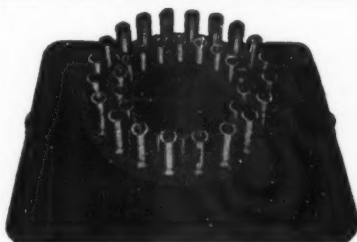
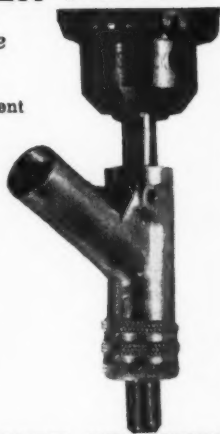
For Spindle
Run-Out.
For
Drill Presses
Lathes, Mills.

SERIES "M"
\$24.50

CASE EXTRA
\$3.50

Bulletin M-8

CENTER SCOPE PRODUCTS
3829 San Fernando Rd., Glendale 4, Calif.



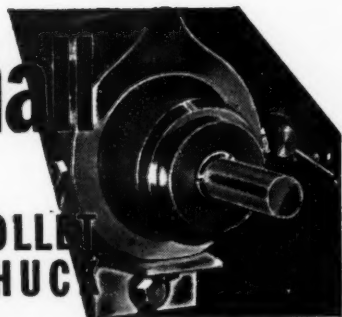
*Pictured: a 38-Spindle Heavy-Duty
Drill Head.*

**DESIGNERS AND
MANUFACTURERS OF
MULTIPLE DRILLING EQUIPMENT**

We invite your inquiry.

MICHIGAN DRILL HEAD CO.
971 E. 8 MILE ROAD HAZEL PARK, MICH.

hall COLLET CHUCK



SPEED UP production in multiple operations with push-out type Hall Collet Chuck. Full spindle capacity or over. Tremendous grip over or under stock size to .007—without adjustments...no bearings, friction, heat or loss of power. Instant release without stopping lathe.

2-inch capacity, \$145; 3-inch capacity, \$295;
1-inch capacity, \$95

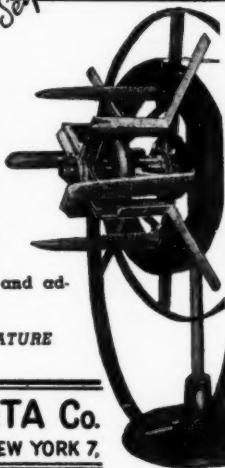
Round, square or hex collets, plain-serrated
HALL MANUFACTURING COMPANY
622 Tularosa Drive • Los Angeles 26, Calif.

WESTLEN REELS

*Adjustable
Self Centering*

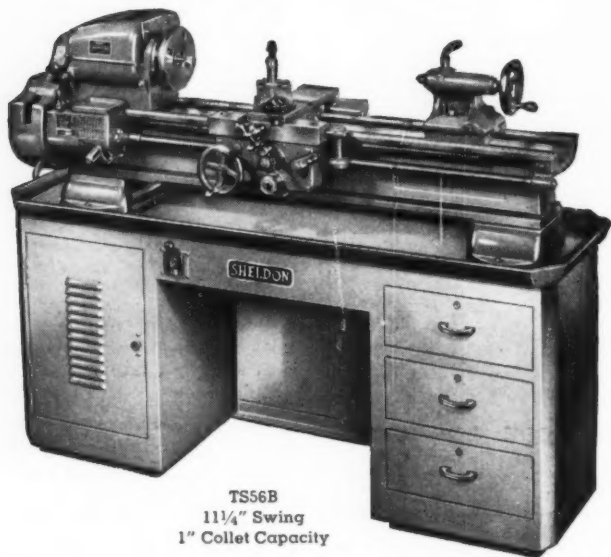
For feeding strip and wire coil stock to presses. Coil capacity 300 to 500 lbs. Outside ring dia., 28" to 36". Height of reel, 36". Wheel automatically adjusts parts to suit inside diameter of coils from 11" to 20". Arm allows for quick conversion to horizontal or vertical position and adjusts height of reel.

SEND FOR LITERATURE



The RULETA Co.
27 WARREN ST. NEW YORK 7,

SHELDON



Accuracy is a matter of Tolerances *not Size*

There may have been a time when to be accurate a lathe had to be massive, cumbersome and expensive. That is not true today.

Accuracy is essentially a matter of tolerances not mass, and today the very finest of spindle bearings (Timkens Zero Precision Tapered Roller Bearings—run out accuracy within .00015) are found on SHELDON Precision Lathes. Beds of these 10", 11" and 12" SHELDON Lathes are held to within .0005" per foot of both parallel and longitudinal alignment while the lead screws are held within a tolerance of lead error of .0005" in any inch. Rigidity is obtained by improved engineering,—by placement of mass rather than sheer bulk.

Advances in machine tool building art, special machines, jigs and fixtures produce uniformly excellent SHELDON Precision Lathes in quantities that permit low selling prices. Larger collet capacities and increased power at the cutting point enable these more-profitable-to-operate lathes to take over much work heretofore requiring larger and more costly equipment.

SHELDON MACHINE CO. Inc.

Manufacturers of Sheldon Precision Lathes • Milling Machines • Shapers
4242 N. KNOX AVENUE • CHICAGO 41, ILLINOIS, U. S. A.

What's New in METALWORKING

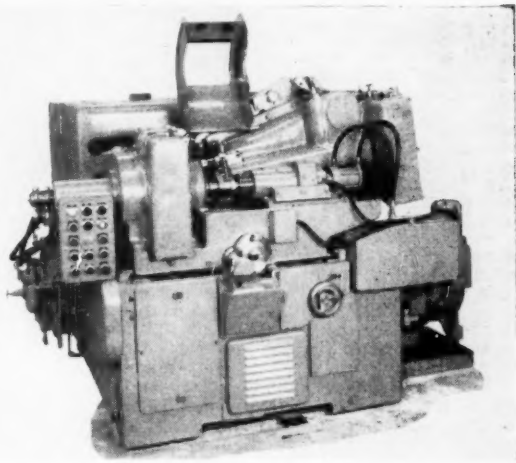
FELLOWS INTRODUCES NEW SPUR AND HELICAL GEAR FINISHING MACHINE

The Fellows Gear Shaper Company has introduced a new machine, which is said to represent a revolutionary development in the art of finishing gears. This machine was on display for the first time at the Machine Tool Show held at the company's plant in Springfield, Vermont, June 20-24.

This machine, shown at the right and on the next page, operates on a principle in which the cutter is set at an angle relative to the work. One of the principle innovations is in the design of the cutter employed. These cutters, as shown on the next page, have teeth of helicoidal shape, and are sharpened by face grinding, in a similar manner to spur Gear Shaper cutters.

An advantage of this type of cutter is its ability to cut freely, without any burnishing effect on the work. The cutter finishes both sides of the teeth in one traverse. While it is possible to remove considerably more stock from the sides of the teeth, than with conventional shaving methods, cutter life is prolonged by keeping amount of stock to be removed to a minimum.

The finish on the teeth of the work is governed largely by the traverse feed



Front view of Fellows No. 12 Gear Finisher for finishing external spur and helical gears, employing a new type of gear finishing cutter.

• • •

of the cutter, and the feed can be varied through change gears. Therefore, any desired finish can be obtained. The traverse feed, within reasonable limits, has no effect on the accuracy of the gear produced.

This machine is designed so that air-operated work-holding fixtures can be applied for clamping and unclamping the work; it is also provided with a tail-

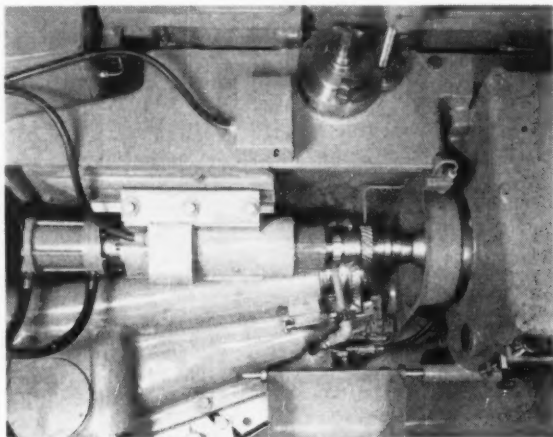
stock for supporting stem pinions. The machine is easy to set-up, and is convenient to operate. It stops automatically when the cutter completes the traverse of the work, the cutter remaining in contact with the work. The finished gear is then removed and an unfinished blank inserted, the cutter thus acting as a setting gauge for locating the teeth on the work, relative to those on the cutter.

The operating cycle is as follows: When the gear is completed, the machine stops automatically, and the work backs away from the cutter an amount equal to the depth of cut. The operator elevates the safety guard, which breaks contact with the button controlling the air-operated clamping mechanism. He then removes the finished gear, and inserts an unfinished gear, the cutter acting as a setting gauge. The "start" button is then depressed, which operates the clamping mechanism, preparing the machine to start as soon as the safety guard is lowered. Cutter and work start rotating with a light clamping pressure on the work. After a short interval, full clamping pressure is applied, and at the same time, the work withdraws from the cutter, and cutter is rapidly traversed across the work to the starting point. The work is then automatically advanced to depth of cut and the cutter is traversed across the work at the desired feed. The machine is entirely automatic in operation, with the exception of loading and unloading the

work. It is also automatically lubricated.

A magnetic chip separator is an important unit of the No. 12 Gear Finisher. It prevents chips from being carried in the cutting oil, thus marring the finish on the work.

The capacities of the machine include a maximum pitch diameter of 12", a maximum outside diameter of work of 12½", a maximum diametrical pitch of 5. The maximum o.d. of the cutter is 7¼". The maximum face width is 8¾".



Close-up view, showing set-up for finishing an external helical gear.

for gears over 9" in diameter, it is 6½". The maximum helix angle is 45°. The overall length of the new machine is 7½ feet; overall depth is 6' 1"; height is 5' 3". For complete specifications, write the manufacturer:

The Fellows Gear Shaper Co.
Springfield, Vt.

MILLING AND SLOTTING ATTACHMENTS

The vertical milling attachment, model V-1200, is driven from the bench mill spindle, allowing use of the automatic feeds of the machine. The V-1200 can be set at angles, pulled out far past the travel of the table for large overhanging work. A wide variety of work, such as punches, punch holders, die shoes, clutches, molds and sprockets can be produced after installation. The unit slips over a 1½" overarm, is easily adapted to



Cutters used on the No. 12 Gear Finisher. The cutter on the left is for a helical gear, and that on the right for a spur gear.

other size overarms by bushings or turning down a special overarm. Spindle takes end mills with $\frac{3}{8}$ " to $1\frac{1}{2}$ " straight shank, up to $\frac{1}{2}$ " diameter cutter. Overall height is $7\frac{1}{2}$ ". Slotting attachment model S-1070, requires no extra motor.

Attached to the bench mill spindle, it permits the production dies, squared or



splined holes, internal gears and many other shapes which cannot ordinarily be made on the bench mill. The Slotter can be set at angles or pulled out past the travel of the table. Stroke is adjustable from 0" to 2". Holder takes tools having $\frac{1}{2}$ " shank.

Marvin Machine Products, Inc.
414 Ford Building
Detroit 26, Mich.

WESPO



T-BOLTS

HEAT TREATED
HIGH TENSILE STRENGTH

1/2	X	2"	.....	\$	.47	ea.
1/2	X	3"	.....		.55	"
3/8	X	2"	.....		.54	"
3/8	X	3"	.....		.64	"
3/4	X	2"	.....		.70	"
3/4	X	3"	.....		.82	"
1	X	4"	.....		1.40	"

Complete Range — to 1x22" other dia. to 12". Write for complete price list and quantity discounts.

IMMEDIATE DELIVERY—
F.O.B. DET.

WEST POINT MFG. CO.

19625 Merriman Ct.

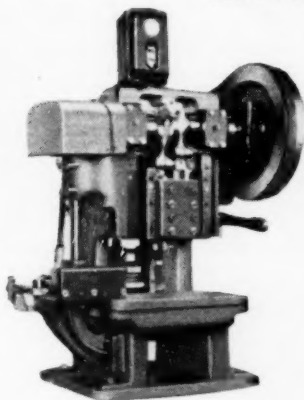
Farmington, Mich.

PERKINS

No. 2AA-T TRANSFER PRESS

SPECIFICATIONS

Area of bed	$7\frac{1}{2}$ x $15\frac{1}{2}$ "
Stroke	$1\frac{1}{2}$ "
Distance from bed to piston	$5\frac{1}{2}$ " (stroke down)
Area of pistons	$2\frac{1}{4}$ x $2\frac{1}{4}$ "
Distance between centers of pistons	$2\frac{1}{2}$ "
Hole in bed	2x4
Size of crankshaft at bearings	2"
Adjustment of pistons	$1\frac{1}{4}$ "
Bolster plate thickness	1"
Feed Rolls	$1\frac{3}{4}$ " dia. rolls
Width of stock	2"
Center of roll feed to bed	$2\frac{5}{8}$ "
Center of feed roll in center line of No. 1 piston.	
Bronze bushed main bearings, bronze gibs and pitmans.	
Distance from bed to ways	7"
Motor required	1 H.P. 540 RPM (Grd. Hd. Mtr.)



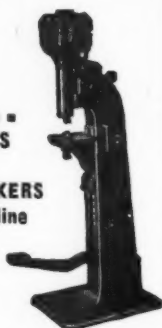
You can now speed production of small parts with the Perkins No. 2AA-T Transfer Press. Two operations can be performed at the same time by transferring the piece from one plunger to the other by means of the transfer attachment. Both pistons or plungers operate from the same crankshaft. Note the specifications below . . . then write for full details as to what the Perkins Transfer Press can do for you.

PERKINS MACHINE CO.
WARREN, MASSACHUSETTS

GRANT

RIVETERS...

**PIONEERS
and
PACEMAKERS
in their line**



—head rivets from smallest to $\frac{1}{2}$ " diameter either by NOISELESS SPINNING or VIBRATING HAMMER method—Sizes to meet all needs—Types include Vertical and Horizontal Multiple Spindles.

Write for literature and don't forget to send samples.

THE GRANT MFG. & MACHINE CO.
C E Station, Bridgeport 5, Conn.

**Micro
Supreme**

**LAY-OUT AND
IDENTIFICATION DYE**

13 COLORS

For Tool, Die, Pattern or Template layout on metal . . . Quick identification of bar stock, sheet, strips or parts . . . Shows up in sharp relief—dries instantly . . . Write for trial sample and circular.

**MICHIGAN CHROME &
CHEMICAL COMPANY**

6340 E. Jefferson Ave. • Detroit 7, Mich.

RUTHMAN INTRODUCES NEW GUSHER PUMP

A motor-driven Gusher Pump, designated as Model UD-8110, has recently been introduced by The Ruthman Machinery Co. The new pump embodies several new features, including the large multiple upper inlet which is cast into the upper section of the impeller housing, the use of an independent flanged vertical tubular housing between the motor and the impeller housing. Provision has been made for ample clearance between the motor and the straight vertical discharge pipe. This new construction permits the use of special alloy castings for the impeller and the impeller housing, when specified. It also lends



itself to adopting a special length tubular housing to meet certain submergence requirements.

The standard unit is made of cast iron; it can also be furnished made of stainless steel, bronze, aluminum, etc. The shaft is available in standard cold rolled or stainless steel. These features, plus the ability to furnish various types of metal enable this unit to be more applicable for handling acids, alkalies and other liquids.

The driving motor is totally enclosed, drip proof, and is provided with a large conduit box and precision, pre-lubricated for life, ball bearings. It may also be furnished with an explosion proof motor, built in accordance with the Underwriters' Laboratories specifications, Class I, Group D.

The pump's capacity is 25 g.p.m. at a 15-foot head, 30 g.p.m. at a 13-foot head, 40 g.p.m. at 10-foot head, with 1½" discharge pipe, utilizing a ¼ h.p., 1725 r.p.m. motor. For complete specifications, write:

The Ruthman Machinery Co.
1817 Reading Road
Cincinnati 2, Ohio

BOKUM TOOL HOLDERS AND ADAPTORS

A new tool holder (A) designed for use of Bokum single point boring tools on lathes has been designed by Bokum Tool Co. With the aid of newly developed shanks and adapters, turret lathe operators now have at their disposal Bokum Boring Tools in a theoretical range of diameters from 1/16" to approximately 4".

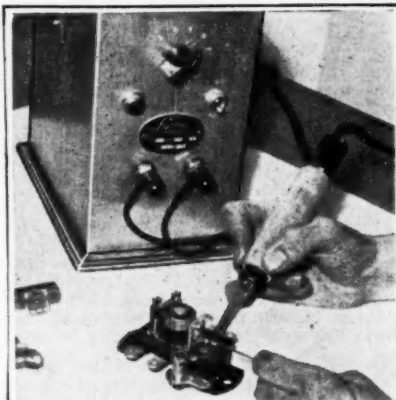


The Holder has a 1½" bore to accommodate the shanks and adapters which are used to hold the smaller tools. Split bushings (B) with 1½" o.d. and 1" and 1¼" inside diameters, are provided for use of Bokum tools Nos. 4 to 12 to give a boring range of minimum diameters from 11/16" to 2".

An adapter (C) of 1½" outside diameter accommodates tools Nos. 00000 to 3 which have a 3/8" shank, and theoretically will give you a minimum diameter range from 1/16" to 9/16".

Shanks of three different diameters with threaded ends are provided for the attaching of the separate cutter heads, Nos. 4 to 12. The shanks are made of heat treated chrome nickel alloy of high tensile strength. They are economical to users because they represent a single investment, since the cutter heads can be easily replaced from stock. Write for complete information to:

Bokum Tool Company
14775 Wildemere Ave.
Detroit 21, Mich.



FOR FASTER, SAFER SOLDERING

The Luma resistance method of soldering is the accepted way for small shops requiring single operation to large plants with many types of operations. Write for complete information about this remarkable tool.

LUMA ELECTRIC EQUIPMENT CO.
P. O. Box 132-H Toledo 1, Ohio

STERLING DRILL GRINDER



CAPACITY:

¾" to 2½" drills.

5" x 9" adjustable table.

MOTOR: ½ hp,
3450 rpm.

NET WT: 250 lbs.

CRATED: 320 lbs.

McDONOUGH MANUFACTURING CO.
EAU CLAIRE, WISCONSIN, U. S. A.

AIR-WATER-HYDRAULIC CYLINDERS FEATURE COMPACT DESIGN

A new idea in cylinder design has been introduced by the Ortman-Miller Machine Co., Inc. These new cylinders, operated with air, water, or hydraulic power, feature simplified construction permitting longer wear with less maintenance.

Tie-rodless construction permits compact design and allows the cylinders to be installed in a minimum of space. For example, the unit with 6" bore cylinder occupies no more space than a 4" bore unit of conventional design. The cylinder is available in bore sizes from 1½" to 8", a range covering between 80 and 90% of industrial cylinder requirements.

Operation of the Ortman-Miller cylinder is guaranteed by the manufacturer to 1,500 cycles per minute continuous duty, increasing several times the number of cycles hitherto achieved in a cylinder.

Other features include all-steel body parts, assuring durability; bearing bronze on all moving surfaces; interchangeable

mounting brackets which may be applied to the cylinder without any disassembly of the cylinder unit; ports which may be oriented independently at random without disassembly and without disturbing the self-adjusting seals; and an extra large piston rod which is one



continuous ground and polished shaft. The cylinders have self-aligning and regulating or adjustable cushions for either or both ends and are applied without adding to the overall mounting dimensions. For complete information, write:

Ortman-Miller Machine Co., Inc.
Dept. BB
Hamond, Ind.



Let us show YOU how

CARTER

Micro-Precision

GUIDE

Pays for Itself QUICKLY

- Holding the blade close to the work, the Carter Guide for bandsaws saves time, materials and preserves saws for longer wear, keeps machine producing.

With templet pins as shown, Carter Guide speeds production vastly. Pays for itself quickly . . . then is ALL extra profit for you. Send now for . . .

FREE Literature

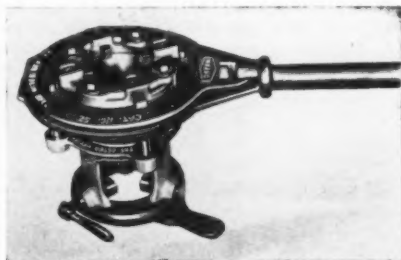
CARTER

PRODUCTS COMPANY

960 Michigan Trust Bldg.
Grand Rapids 2, Michigan

OSTER RECEDING DIE STOCK

This ratchet type, receding die-stock, known as No. 52 "Leader", is designed for fast, easy threading of 1" to 2" pipe and is equipped with Acme Thread lead screw said to be stronger and more durable than the commonly used N.C. form of lead screw. Die-holders are separate units, fully adjustable for oversize or undersize threads and replaceable at small cost. The universal, centering

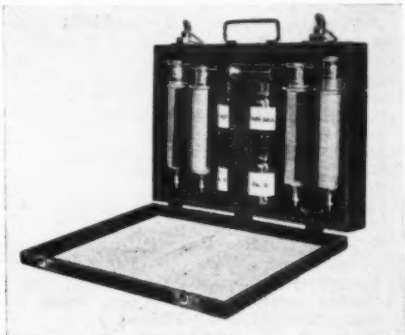


chuck with three fully serrated jaws and locking screw assure quick, accurate centering on the pipe. The No. 52 "Leader" is a companion tool of the No. 54 "Leader", a new geared, receding die-stock designed for both hand and power operation in threading 2½" to 4" pipe. Made by:

**The Oster Manufacturing Co.,
Cleveland 3, Ohio**

INDUSTRIAL NITROGEN DIOXIDE DETECTOR

Rapid, on-the-job determinations of nitrogen dioxide concentrations in industrial atmospheres are now possible with



the new, portable nitrogen dioxide detector. The detector can determine nitrogen dioxide concentrations from 1 to 500 p.p.m. more conveniently and in a much shorter period than previously possible. The entire detector unit consists of a field kit containing reagent bottles, sampling syringes, color plaques and directions. Solutions of sulfanilic acid and alphanaphthylamine to be used later in sampling are prepared in the laboratory, and become the reagents of the detector unit. Before making a test, and in an uncontaminated atmosphere, these reagents are combined in equal amounts in the sampling syringes. In the suspected area, a syringe is uncapped and a measured quantity of air sampled. Ten minutes after the cap has been replaced, and the syringe thoroughly shaken, the reading can be made. The resulting color of the solution is compared with the standard plaques, and the percentage of nitrogen dioxide contamination, if any, is promptly indicated.

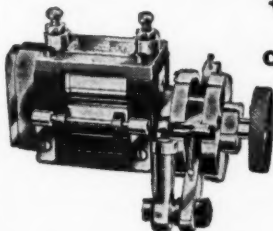
Descriptive information is available upon request to:

**Mine Safety Appliances Co.
Braddock, Thomas and Meade St.
Pittsburg 8, Pa.**

A Most Versatile ROLL FEED for ~~\$99.50~~

\$89.50

**Net
Complete**



A PRECISION ROLLFEED with Semi-Steel Castings, Hardened and Ground Rolls and Friction Discs. Other sizes priced proportionately low.

Write for Circular

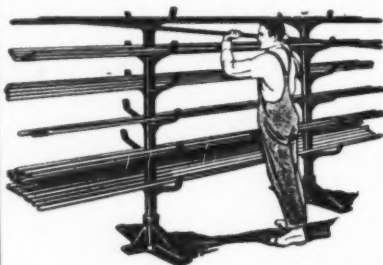
● **ROLL FEEDS CORP.**

● 148 Middle St. Pawtucket, R. I.



HOW YOU CAN BOOST YOUR PROFITS

The BROWN TIME-SAVING RACK saves the time previously lost end-hauling each bar of stock its entire length from the old-style, closed-side Rack, the Brown Rack requiring but a few inches of side movement. Each length, width and thickness of stock is displayed in gold-fish visibility for instant selection. Workmen waiting for stock are served without waste of time, and returned to their production machines to turn out a maximum of output.



Any time you require additional storage space, all you need do is to add more units. If you want to relocate it at any time, you can do so quickly for it is unattached to the building. It is a simple, durable article made of metal in five styles. It can't burn, warp, sag or twist; depreciation is practically nil.

SEND FOR BULLETIN No. 26-B DESCRIBING THE BROWN TIME-SAVING RACK.

BROWN ENGINEERING CO.

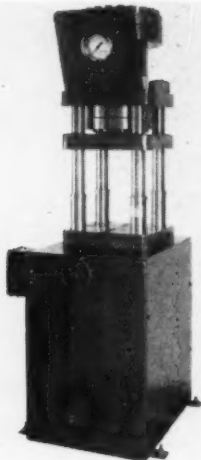
126 N. THIRD ST. - READING, PA.

RACKS • VISES • CLUTCHES • COUPLINGS

M & N 50-TON DRAWING PRESS

A self-contained 50-ton drawing press engineered for the accurate drawing and forming of metals is being produced by the M & N Machine Tool Works, Inc.

Featuring a 12" x 12" opening, a 10" stroke, and 120" advance speed per minute and a pressing speed under full load of 7½" per minute, the press is meeting with wide acceptance in the metalworking field. A sturdily built press, downward acting, it can be supplied with air or hydraulic cushions. The unit can be built on order to a capacity of 200 tons.



Standing 6 feet high, the press occupies an area of 24" x 30" and weighs 1600 lbs. The dual pressure pump is contained in the base. The large dial is tilted forward for accurate readings. All controls are easily operated for precision control of the unit.

A two-color catalog, showing the wide range of the M & N line of hydraulic equipment is available on request. The Engineering Dept. at M & N will recommend the type of standard M & N press required for any hobbing, forming, drawing, or shearing-in problem. Write:

M & N Machine Tool Works, Inc.

Dept. BB

Allwood-Clifton, N. J.

The B. C. Ames Co., Waltham, Mass., announces the appointment of W. E. Fry & Company, Kansas City 6, Mo., as their exclusive representative in the states of Kansas, Nebraska, and Missouri.

VIKING CARBIDE FACE MILLING CUTTER

The Viking Tool Company has developed a new carbide face milling cutter, combining the stock removal qualities of brazed on, and serrated blade tipped cutters with the regrinding features of the solid carbide bladed face mills. The main feature of this new face is a large carbide tip with sufficient steel backing to effect the addition of serrations to the back of the blade. The amount of steel brazed to the carbide is negligible, and the heavy carbide tip remains the dominant material, thus eliminating the tendency of bi-metal cracking of carbide under thermal strains.

Positive locking of the blade in the cutter is accomplished by a hardened tool steel serrated wedge behind the serrated blade. The wedge is lipped on its cutter portion, to provide a positive resistance to feed thrust on the blade, independent of the locking screw. The locking screw provides positive withdrawal of the wedge as well as locking.



The cutter is so designed that the heavy cross section carbide tip is adequately supported by the heavy chrome nickel alloy, heat treated, cutter body. Up to 90% of the carbide can be consumed before blade replacement is necessary. This feature provides long blade life; this combined with the low regrinding time, provides low operating costs.

The Viking Tool Company will supply these face mills with the number of blades, and radial and axial rakes to suit the job. Double negative, zero, and double positive rake cutters will be cataloged.

For complete information, write:
Viking Tool Co., Dept. BB
Shelton, Conn.

*Buy
KIPP AIR GRINDERS
Because*

The RPM's stay up while grinding... not only when the grinder runs idle.

It is an established fact that surface speeds must stay up to approximately a mile a minute if you want to grind — not just rub. The speed of Kipp air grinders drops but slightly when put to work. That means better work — longer wheel life.

Buy Kipp air tools for best results, lower prices.

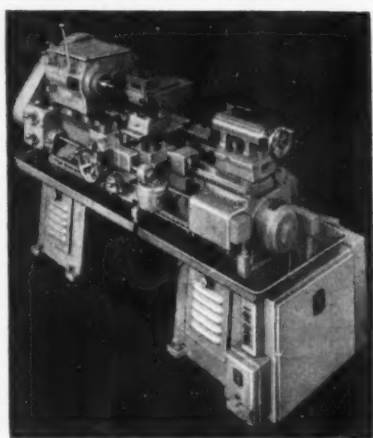
MODEL JA
50,000 R. P. M.
\$42⁰⁰
IN U. S. A.



Weight 12 ounces;
length 6¾ inches;
chuck size ⅜ inch.
Wheel guard re-
moved for better
illustration.

MADISON-KIPP CORP.
207 Waubesa St., Madison, Wis., U. S. A.

*• Skilled in DIE CASTING Mechanics
• Experienced in LUBRICATION Engineering
• Originators of Really High Speed AIR TOOLS*



New
AUTOMATIC LATHE
Delivers Speeds
up to 3600 RPM

The new LeBlond Clipper, high speed automatic manufacturing lathe, can be fitted with one of three optional headstocks offering spindle speeds as low as 68 rpm and as high as 3600 rpm. Designed for turning either metal or plastics, the new LeBlond Clipper runs automatically through a complete cycle. Operator attention is thus reduced so that one man can tend several Clippers.

For complete information send today for Bulletin ARP-1.

THE R. K. LeBLOND
MACHINE TOOL CO.

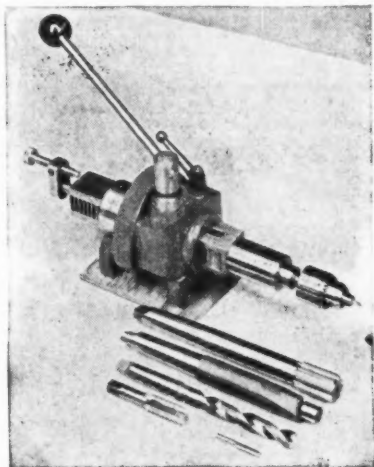
CINCINNATI 8, OHIO, U.S.A.

**Largest Manufacturer of a Complete
 Line of Lathes**

**Sales Offices: New York, Chicago,
 Detroit, Philadelphia**

**TURRET ATTACHMENT PERMITS
 FINGER-TIP CONTROL**

The Star Sensitive Turret Attachment, a new device which gives the operator a more delicate "feel" of work performed on a turret lathe, is announced by the Williams and Hussey Machine Co., Inc. Tests have shown that by using the Turret Attachment, tapping from 6/32" to 4" and operations such as centering, drilling, reaming and counterboring can be done with greater ease and less tool breakage.



The Attachment is mounted in any one of the turret positions, and the hand-wheel is used to bring the turret up near the work. Then, using the lever arm to control in-and-out motion, the lathe operator has sensitive finger-tip control of the operation to be done.

The front of the ram of the Attachment is cylindrical and is equipped with a No. 4 Morse Taper hole, drift pin and pin holes.

The Star Sensitive Turret Attachment is available in five sizes. All mount directly on turrets with or without adapters, depending on the make and model of the lathes being used. Complete information in a new brochure is now available upon request to:

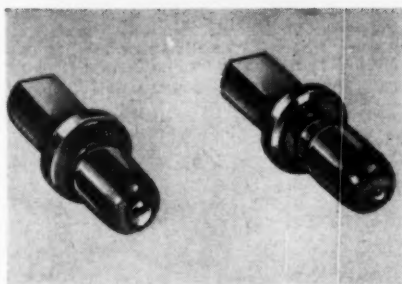
Williams & Hussey Machine Co., Inc.
Dept. BB
Wilton, N. H.

STEEL BALL PENETRATORS FOR ROCKWELL TESTING MACHINES

Steel ball penetrators, designed for accurate hardness testing in all makes of "Rockwell" testing machines, are announced by Clark Instrument, Inc. This makes a new source of supply available to owners whose laboratories and shops are not equipped with Clark Hardness Testers.


Clark interchangeable ball penetrators are made of hardened steel, with a fine finish. They are ground to a precise roundness, providing smooth even penetration that is said to assure unusually accurate readings.

The penetrators are available in 1/16", 1/8", 1/4", and 1/2" sizes, and are used with Rockwell scales B, E, F, G, H, K, L, M, P, R, S, V, 15-T, 30-T and 45-T. The 1/16" size is furnished as standard equipment with all Clark Superficial Hardness Testers, and both the 1/16" and 1/8" size are furnished with the Clark Stand-



ard Hardness Tester. Other sizes are also available. For full information, write:

Clark Instrument Co., Inc.
10200 Ford Road
Dearborn, Mich.



**EFFICIENT — LOW COST
PRODUCTION**

MEANS

ROUSSELLE

**PUNCH
PRESSES**

WRITE FOR
DETAILS

O.B.I. PRESS

HORN PRESS

DEEP THROAT

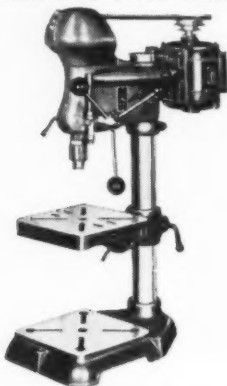
**7627-33
S. Ashland Ave.
Chicago 20**

SERVICE MACHINE COMPANY

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

NEW FAMCO LINE OF DRILL PRESSES

Famco Machine Company announces the addition of a 15" Drill Press to their machinery line. The Famco Drill Press series consists of seven models, both



bench and floor types, in tilting table or one, two, three, and four spindle production models. Chuck capacity ranges from No. 70 to 1½" Jacobs Chuck, with No. 1 Morse Taper optional.

The press is of rugged construction, precision machined throughout, and offers the largest quill in its price field, 2 3/64". Famco's extra long (4½") stroke, with a shorter, six spline spindle, permits greater bearing support and rigidity...gives improved accuracy. Quill and column bearings, line bored in one operation, also provide greater machine trueness.

Spindle speeds range from 625 to 4800 r.p.m. in standard models, and from 490 to 3000 r.p.m. on Slo-Speed models. With the Famco speed-reducing attachment, spindle speeds as low as 185 r.p.m. may be obtained. This attachment, together with belt guard and tapping attachment are optional equipment on all models.

Full details are available upon request. Write:

Famco Machine Co.
1320 Racine St.
Racine, Wis.

Appointment of **Dolan Industrial Sales**, Houston 2, Texas, as representatives in southern Texas, has been announced by Paul F. Zerkle, sales manager of Michigan Tool Company, Detroit.

OVER 50 YEARS ★ THE BENDER PEOPLE

Wallace

Here is an easily operated hand bender for economical bending of flats, rounds, pipes and bars. 4" high dies and 2" diameter pin for radius bending included as standard equipment. All steel construction, sealed ball bearings, die holders keyed for speedy change-over are other features of the Wallace No. 9 Hand Bender... a basic unit for production and for maintenance. Write, phone or wire today for detailed bulletin.

"Cold Bending Manual" and data on HYDRAULIC POWER benders available on application.

**NO 9
HAND BENDER**

WALLACE SUPPLIES MFG.
1310 DIV. PKWY. CO. CHICAGO 14, ILL.

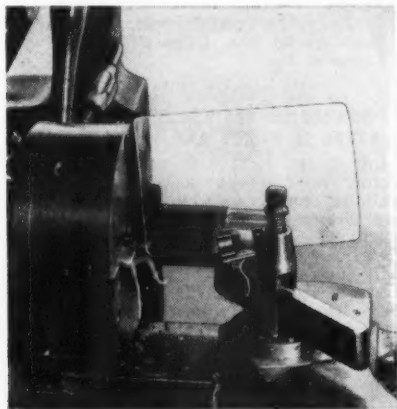
M & M CARBIDE AND CAST-ALLOY TIPPED SAW BLADES

Moitch and Merryweather Machinery Company has recently introduced carbide-tipped and cast-alloy-tipped saw blades, in addition to its regular line of Triple-Chip segmental and solid saw blades. The tipped blades, available in segmental or solid types, have either SegTriple-Chip or Special tooth grind. Segmental tipped blades are made in diameters up to 18". Tipped blades are manufactured to customers specifications or for specific production requirements. These blades are recommended for the sawing of plastics and non-ferrous materials and for the milling of ferrous and non-ferrous materials. For complete details and specifications write the manufacturer.

Moitch and Merryweather Mach'y. Co.
Penton Bldg.
Cleveland 13, Ohio

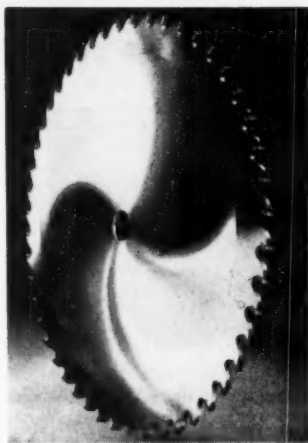
NEW PLEXIGLASS LATHE SHIELD

Lathe operators are now assured of complete protection by a new Plexiglass lathe shield which is easily attached by means of a spring clip to any cutting tool holder. The shield is 3" high by 5" wide and provides full vision of every cutting operation. It eliminates the necessity of wearing cumbersome goggles. Fully adjustable to any position, it deflects and



concentrates all chips and shavings, making it easy to clean the lathe. Spring clips are available for $\frac{1}{4}$ ", $\frac{3}{8}$ " and $\frac{1}{2}$ " cutting tool holders. Write for complete details to:

Frank Gradischig Co., Dept. BB
2417 No. Cramer St.
Milwaukee 11, Wis.



R. Bruce McKenzie has recently been appointed sales engineer by the Butterfield Division, Union Twist Drill Co., Derby Line, Vt.

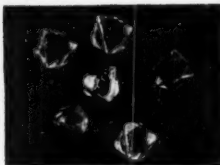
CLIPPER PRECISION DIAMOND TOOLS

Industrial Diamonds

Thread Grinders
Turning Tools
Engraving Tools
Dressing Tools
Diamond Powder



Every CLIPPER tool is guaranteed. Send blueprints. Let us quote on your requirements.

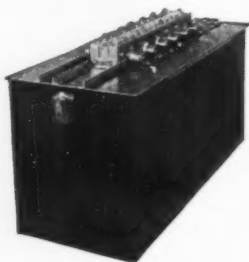


Representatives in Principal Cities

CLIPPER DIAMOND TOOL CO., INC.
210 W. 46 ST. N.Y. 19



ROLL FORMING MACHINES AND ROLLER DIES



Also Pittsburgh Lock Machines, Pipe and Elbow, Beading, Turning Machines and all other Sheet Metal Working Machinery—

Your Inquiries invited.

Maplewood Machinery Co.

2634 Fullerton Ave. Chicago, Illinois

M-T FIXTURE CLAMPS AND COMPONENTS

BE DOUBLY
SURE with
M-T QUALITY



FIXTURE CLAMPS — wide range of sizes and types to fit every requirement.

- Jack Locks . . . Cam
- Locks . . . Hand Knobs . . .
- Hand Wheels . . . Steel
- Ball Handles . . . Soft
- Chuck Jaw Blanks . . .
- Fixture Cams . . . Alloy
- Set-up Studs . . . Rest
- Buttons and Rest Pads . . .
- . . . Spherical and Plain
- Collar Nuts . . . Quarter
- Turn Screws . . . Fixture
- Keys . . . Spherical and
- Flat Washers . . . Shoulder Screws and many other items from stock.

MORTON MACHINE WORKS

2422 Wolcott St.,

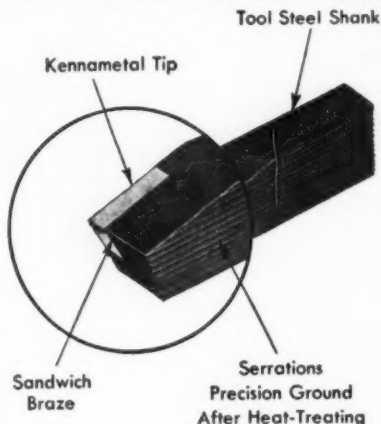
Write for Complete

Detroit 20, Mich.

Catalog.

SERRATED MILLING CUTTER BLADES

Kennametal Inc., is now manufacturing serrated milling cutter blades, having brazed-on Kennametal tips. These blades are produced to specifications in a wide variety of forms, and can be furnished



ground with any of the common types of serrations, such as 90°, 60°, or those having combination plane and serrated surfaces. Further particulars are available from the manufacturer.

Kennametal, Inc., Dept. BB
Latrobe, Pa.

CORROSION-RESISTANT STAINLESS STEEL IN SHEET AND PLATE FORM

Introduced in 1948 in various wrought forms, a "super corrosion-resistant" stainless steel known as Carpenter Stainless No. 20 is now being commercially produced in the forms of sheet and plate.

Up to the time of its introduction in the wrought forms of bar stock, wire, strip, tubing and pipe, the material was available only in cast form, known as Durimet 20, manufactured by The Durimet Co., Inc., Dayton, Ohio. Wrought forms of the material are produced and sold by The Carpenter Steel Co.

Recently-developed manufacturing methods have made possible the commercial production of Stainless No. 20 sheet and plate. Stainless No. 20 sheet is produced in standard widths and lengths in gauges from 24 to 11, while plate is being produced in thicknesses from 3/16" up. The new forms in which this stainless steel is now available offer de-

signers and process engineers the opportunity to provide uniformly good corrosion resistance to equipment or process lines.

Because of its resistance to the corrosive effects of sulphuric acid and other substances, Carpenter Stainless No. 20 is used in the manufacture of heavy and organic chemicals, synthetic rubber, solvents, explosives, plastics, etc. Typical uses include pump shafts and rods, valve parts, screens, pipe lines, heat exchangers, etc. The type analysis of the new alloy is as follows:

Carbon	.07% max.
Manganese	.75
Silicon	1.00
Chromium	20.00
Nickel	29.00
Molybdenum	2.00 min.
Copper	3.00 min.

For additional information about Carpenter Stainless No. 20 in the new forms of sheet and plate, write:

Alloy Tube Division, Dept. BB
The Carpenter Steel Co.
Union, N. J.

STANDARD SCREW AND WIRE GAUGE

The Dayton Rogers Manufacturing Co. offers for free distribution a standard screw and wire gauge. This useful device is made of good quality steel and accurately finished to size. It will very quickly tell the size of screws No. 0 to No. 14, either in wood or machine screw sizes. The left hand side of the V-slot



will measure diameters from 1/32" to 1/4". The gauge is approximately 3" long, 1 3/8" wide and 1/16" thick.

This pocket gauge is fully rust proof, and may be obtained free of charge when request is made on company letterhead. Write:

Dayton Rogers Mfg. Co.
Minneapolis 7, Minn.

The

U. S. NAVY

uses

"LUCIFER"

ELECTRIC HEAT TREAT FURNACES

Sizes from 6"x6"x6"
 to 12"x12"x24"
 and larger specials.

Prices \$155.25 up.

Gilbert S. Simonski

401 N. Broad St. Philadelphia 8, Pa.

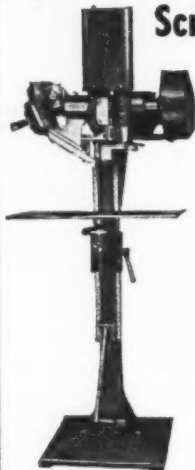
Over 40
FORD CARBIDE CUTTER SHAPES

FORD
CARBIDE ROTARY CUTTERS —
MACHINE GROUND

For filing, grinding and finishing, burring, counter-sinking and chamfering, light milling, profiling, tool, die and mold machining. Ford carbide cutters will do a better job in less time at a lower cost—and without a major capital investment. Send for Bulletin C-549 - Sizes and Specifications

M. A. FORD MFG. CO., INC.
 Davenport 6, Iowa

Reynolds - Magazine Feed Screw Driving Machines



*
Simplify and
Speed up those
high production
Assembly jobs.

A complete line of
production type
screw driving ma-
chines for every
application.

WRITE FOR
CATALOG

COOK & CHICK CO.

640 S. MILLER ST.

CHICAGO 7, ILL.

ARTUS PLASTIC SHIM



AND
FEELER
GAUGE
STOCK

The COLOR
tells the
THICKNESS

Each thickness a distinctive, easy to
identify color. Impervious to oil. Long
lasting. 5" x 20" sheets. Special sizes to
order. Handy assortment, shim stock, 12
colors—12 thicknesses (.001-.030). Bound
together. \$4.25.

Order today. Immediate delivery.

INDUSTRIAL PRODUCTS SUPPLIERS

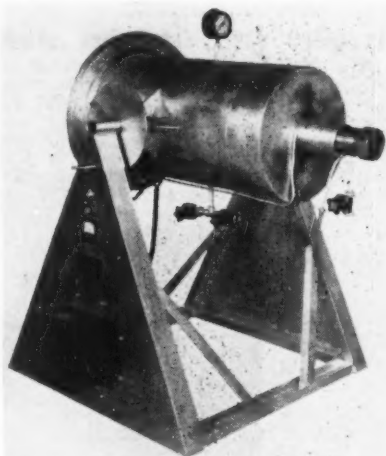
434 Broadway, Dept. H, New York 13, N. Y.

MOLYBDENUM-VACUUM ELECTRIC FURNACE HAS 3500° CAPACITY

High-temperature operation up to
3500° F., under a neutral or reducing
atmosphere pure enough to sinter chro-
mium without oxidation, is featured by
the new Model MO-224 Molybdenum-
Vacuum Electric Furnace announced by
Pereny Equipment Company. The recom-
mended average operating temperature is
approximately 3300° F. with the maxi-
mum peak of 3500° F. for short cycles.
The steel case of this unit is designed to
maintain a vacuum of 30 in. Hg. The
furnace can be positioned either hori-
zontally or vertically.

The unit is a dual-tube type, so con-
structed that the inner tube containing
the molybdenum element may be remov-
ed without disturbing the furnace proper.
This element is designed to compensate
for heat gradient at the tube ends.

The working area of the furnace is 2"
i.d. by 28" long, with an 18" controlled
temperature length. It has one open end



with a 10" vestibule or sight tube, and
can be supplied with both ends open
when required. The sight tube and face
of the furnace are water cooled. A
Pyrex or quartz sight lens is provided
and may be removed or replaced quickly,
permitting the mounting of thermo-
couples or other equipment when de-
sirable.

The new unit has connections for neu-
tral or reducing atmospheres, vacuum,
and water. Power input required is 6

KW, 220 volts, 60-cycle, single phase.
For complete specifications, write:
Pereny Equipment Co., Dept. BB
893 Chambers Road
Columbus 12, Ohio

INGERSOLL-RAND MIDGET AIR HOIST

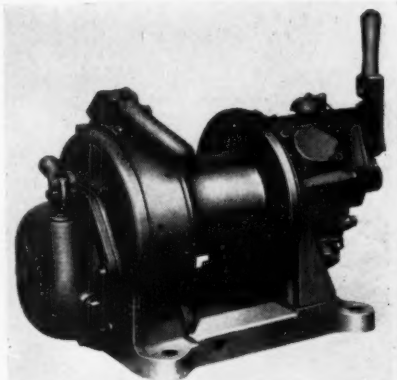
A new midget single drum utility hoist is announced by Ingersoll-Rand Company. Known as the Size BU, the hoist is useful for a variety of hoisting, skidding and hauling jobs. It will lift a 600 pound load at 50 feet per minute. Heavier loads may be handled by use of proper sheave blocks.

The reversible 4-cylinder radial piston-type air motor, equipped with safety type throttle, supplies the extra power needed when the going gets tough. A wide band-type brake gives positive holding power while the reversible motor permits lowering the load under power. For quickly pulling out cable, a clutch lever permits the operator to disengage the drum with ease.

Measuring only $18\frac{1}{2}$ " long by $10\frac{3}{4}$ " wide and $11\frac{3}{4}$ " high, the Size BU Hoist is a compact, lightweight (72 pounds less rope) hoist that may be carried and installed by one man.

Contractors and industrial plant work-

men will find the hoist valuable for many jobs such as moving equipment, hauling timber, spotting cars, repairing overhead cranes and roofs, structural steel work, etc.



For additional information, write:
Ingersoll-Rand Co., Dept. BB
11 Broadway
New York 4, N. Y.



**CHECK RUNOUT TO
WITHIN .0001" ON
THIS MODERN
BENCH CENTER**

COMPLETE RANGE AS FOLLOWS:—

6" x 18"	12" x 36"	12" x 60"
6" x 36"	12" x 48"	12" x 72"

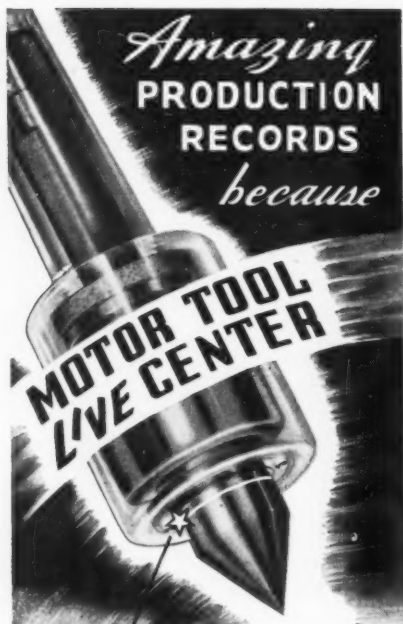


**SUNDSTRAND
MACHINE TOOL COMPANY**

2535 Eleventh St. • Rockford, Illinois, U.S.A.

A precision tool for testing and checking parts between centers. Both heads adjustable, locked in place by lever-operated clamps. Work is held between one fixed center while spring loaded retractable center clamps work in position. Dial indicator with adjustable holder available as extra equipment.

FREE ADDITIONAL DATA covering complete specifications and additional features is contained in this bulletin. Write for your copy today. Ask for data sheet No. 488.



is the **ONLY** Center
with the
**OVERLOAD
INDICATOR**

Look for the **RED BAND**

You no longer have to guess whether you are overloading your live center thrust bearings if you use **MOTOR TOOL LIVE CENTERS**. When the load is too great the **RED BAND** around the spindle disappears into the housing. You can see at a glance when overloading occurs. This is an exclusive feature, developed by Motor Tool which cuts repair costs to practically nothing if due diligence is exercised. As long as the **RED BAND** is visible you are running **COOL** and **SAFE**.

Send for

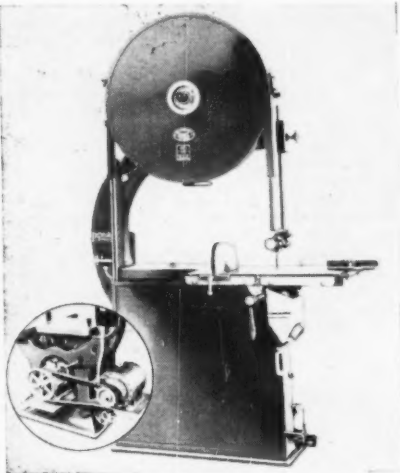
NEW descriptive folder . . . and verified case histories of how **MOTOR TOOL LIVE CENTERS** have out-performed and outlasted All other centers on exceedingly tough, continuous-run jobs.

MOTOR TOOL MFG. CO.
2663 DAYTON ST. DETROIT 10, MICH. PHONE IN 3-3414

Make it a Rule
to Call Motor Tool

**HIGH-SPEED METAL-CUTTING
BAND SAW**

A High Speed Band Saw equipped with a heavy-duty 4-speed transmission has recently been introduced by The Moak Machine and Tool Co., for cutting metals and alloys. The new unit provides a choice of operating speeds from 150 to 1200 r.p.m. The manufacturer has also installed prelubricated and factory sealed bearings on the wheels and motor, eliminating the need for periodic lubrication,



and the danger of over and under-lubrication of these critical points. New two-wheel equalized brakes stop the wheels smoothly in a few seconds when the brake pedal is depressed, or automatically if a blade breaks. Complete specifications are available upon request. Write:

Moak Machine and Tool Co., Dept. BB
Port Huron, Michigan

STEEL DRAWER PARTS CABINETS

Equipto, Division of Aurora Equipment Company, announces two new exceptionally strong steel drawer cabinets. They were designed for nuts, bolts, washers, plumbing supplies, laboratory items, hardware supplies, electrical parts, and innumerable other small pieces. They can be used singly, side-by-side, back-to-back, and stacked on top of each other. Frames are welded into one strong solid assembly. Drawers have adjustable cross dividers on one inch centers. Lengthwise

dividers may be added or removed at will. Label holders are furnished on every drawer or divider. Cabinets are finished in olive green baked enamel.

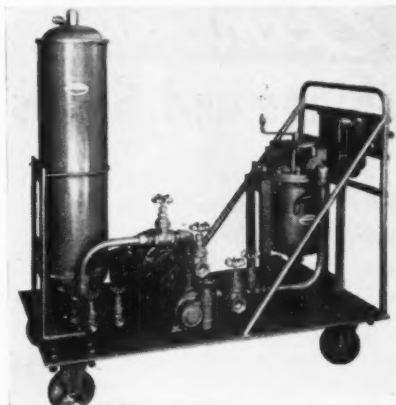


Equipto Model 11 (illustrated), has 18 drawers, each with three cross dividers, giving 72 adjustable compartments. The overall size is: width 34", height 13 $\frac{3}{4}$ ", depth 12". The drawer size is 11 $\frac{7}{8}$ " x 5 $\frac{5}{8}$ " x 3 $\frac{3}{8}$ " high. The other new cabinet, Model 8, has 8 drawers, each with two cross dividers, giving 24 adjustable compartments. The overall size is: width 25 $\frac{1}{2}$ ", height 10", depth 12". The drawer size is the same as No. 11. For further information, write:

Equipto Division, Dept. BB
Aurora Equipment Co.
Aurora, Ill.

PORTABLE TRANSFER UNIT AND FILTER

A portable Transfer Unit that can also be used for fine filtration of fluids has been introduced by J. N. Fauver Co., Inc. Mounted on the truck with the



electrically driven pump are both a metal edged strainer and micronic type filters. In the process of transfer of the fluid, the valves are so arranged that

Rouse
NEW HAND MILLER
ATTACHMENTS MAKE
MILLING SMALL PARTS
Faster, Safer...



The new Vise's specially slotted removable jaw enables it to hold odd shaped pieces, considerably increasing the Hand Miller's production. The new Safety Cutter Guard makes hand injuries virtually impossible.

The Rouse Hand Miller is an efficient, high speed, ball bearing, motor-driven machine for handling light cuts in brass, aluminum, steel, plastics, and other materials. It mills small parts fast—accurately—inexpensively, eliminating costly set up time and making it possible to use ordinary, inexperienced help.

WRITE FOR ILLUSTRATED CIRCULAR

H. B. ROUSE & COMPANY
2214 N. WAYNE AVE., CHICAGO 14
50 YEARS OF SERVICE TO INDUSTRY

either one, both, or neither of the filters can be used. This equipment can be used with equal effectiveness in the cleaning of batches of paint, coolant, solvents, hydraulic and lubricating oils, etc.

While the illustrated model has a capacity of 20 g.p.m., the units may be built to nearly any specification. Standard capacities are: 5, 10, 15, 20, 40, 50, and 80 g.p.m. The units can be supplied with suction and discharge hose assemblies. A push button starting switch for the pump motor is supplied. For complete specifications, write:

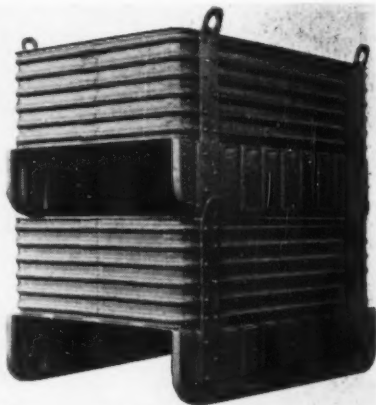
J. N. Fauver Co., Dept. BB
49 W. Hancock Ave.
Detroit 1, Mich.

CORRUGATED STEEL PLATFORM BOX

A new heavy-duty all-steel corrugated platform box, built to any size has been developed by Palmer-Shile Company, Detroit, manufacturers of materials handling equipment.

The boxes are easily handled by lift crane and may be tied to any height. Crane lugs, stacking brackets and channel runners are optional, according to customer specifications. The boxes are

built to required dimensions, including underneath clearance. Load capacity, and color of paint desired, may also be



specified. For complete details, write:
Palmer-Shile Co., Dept. BB
12648 Mansfield Ave.
Detroit 27, Mich.



You're a Production Winner with *Economy* Drill-Jig Bushings and Gages

Yes, they're in stock, ready to go out to you — all A. S. A. standard types and sizes. You can also get fast service on new gages or gages salvaged by hard chromium plating . . . precision-finished, durable. Write for bulletin and price list.

***Economy* TOOL & MACHINE CO.**

1829 SOUTH 68th STREET • MILWAUKEE 14, WISCONSIN

TIETZMANN

Die Checker

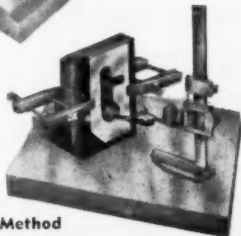
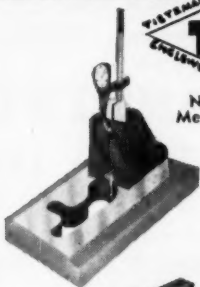
★ FAST ★ ACCURATE ★ EFFICIENT
★ AMAZINGLY NEW

Your tool maker's time is too valuable to waste on old fashioned die checking methods. You can save 90% of your tool maker's checking time with the new Tietzmann Die Checker. It saves time when building dies... is easy to use... does not require extra inspection labor. This time-saver fits Micromaster. Last Word, Gem, Federal indicators: special holder for extra. Special holder for Micromaster is also \$1.65 extra. Cost of Tietzmann time-saving Die Checker is only \$85.00.

Representative Wanted



New Method



Old Method

TIETZMANN TOOL CORPORATION

315-317 N. Main St.

Englewood, Ohio

MATCO Wheel Dresser

Really Saves Time!

ELIMINATES

1. Removing and replacing work on the chuck or table
2. Machine stopping for dressing
3. Lowering and raising wheel head
4. Wheel and diamond accidents
5. Frequent diamond settings.

DIAMOND ON DRESSER IS CONSTANTLY ROTATED

6. The higher the work on the chuck, the more time saved

DESIGNED FOR LIFETIME USE

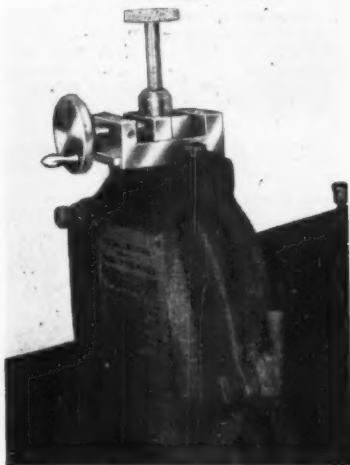
- Dresser Compensated for Wear
- Easily Attached

Sent on 10-DAY APPROVAL at No Cost to You!
BUILT BY TOOL AND DIE MAKERS

Mfrs. Complete Line of Precision
Vises—Dressers

MATCO TOOL CO.

2830-36 West Lake Street
Chicago 12, Illinois





Plain Type

CLOSED
TRADE
AUTOM
MARK



Offset Type

CONTINUOUS HINGES

All hinges shown can be furnished with special holes, cutouts and bends to blue-print in metals to suit the job.

THREE-FOURTHS OFFSET.

AUTO Moulding & MFG. CO.

**1110 E. 87TH ST.
CHICAGO 19, ILL.**

SPECIFICATIONS:
Open Width $\frac{1}{8}$ " to 6"
Gage Material .040 to .125
Pin Diameter .101 to $\frac{1}{16}$ "
Lengths to 120"

SEMI-OFFSET

KNURL it Easily, Quickly, Safely

Use any Standard Knurls $\frac{3}{8}$ " x $\frac{1}{4}$ "



Two Sizes:
1/16" to 2"
2" to 4"

FOR LARGE OR SMALL LATHES

TOOLMAKERS' PRECISION VISES



6 Sizes
Priced To Sell

Joseph B. Fakes & Co., Royal Oak, Mich.



STILL THE LOWEST PRICED LIVE CENTER

No. 2 Morse Taper Shanks **\$625**
No. 3—\$7.75 No. 4—\$9.75

Ask Your Dealer for Details

NEW!



REVOLVING TIP LATHE CENTERS

- No BULKY HEADS
- Same Dimensions as Solid Centers
- Rigidity and Concentricity of Dead Center
- Yields under load to compensate for work expansion
- Precision Work due to Long Bearing Surface of Spindle.

ERNEST H. VANDERWALL CO. 440 Golden Gate Ave. **SAN FRANCISCO 2, CALIF.**

How to remove burrs - FASTER, EASIER, BETTER!

With the new NOBUR tool you can burr holes faster—improve the finish of deburred parts and lower production costs by eliminating burring as a bench operation. The NOBUR tool works like a drill, making burring a fast, easy machine operation. The NOBUR tool is available in 1/16" progressive sizes from 3/16" to 1" in diameter. Write today for new complete burring folder.

NOBUR MANUFACTURING COMPANY
717 North Victory Blvd., Burbank, California



NEW END MILLS PERMIT MORE CUTS PER GRIND

The redesigned line of end mills, currently introduced by The Cleveland Twist Drill Co., incorporates many new and distinctive features which permit strength, speed and accuracy to a degree not previously obtainable.

Users of the redesigned end mills are said to be enthusiastic about its performance. They report less breakage, more cuts per grind, consistent accuracy, and up to 50% increase in feed.

The manufacturer has disclosed six major design features which distinguish the new end mills:

Redesigned flutes are machine polished. There are no pockets. Chips are free to move.

New clearance and accurate machine polish of flutes result in closer control of size.

There are no sharp corners or points where localization of stresses might occur. A minimum amount of metal has been cut away.

New-style clearance supports the cutting edge, thus assuring against "flaking" or "chipping out."

Radically new flute shape and chip clearing ability reduce wear on the cut-

ting edge, thus maintaining consistent accuracy.

New flute shape gives maximum cutting qualities at increased rates of feed.



Further information may be obtained from:

The Cleveland Twist Drill Co.
1242 East 49th St.
Cleveland 14, Ohio

MICO

2 and 3-Dimensional ENGRAVER

• NOW you can do three-dimensional milling by tracing shape of enlarged master with stylus. The 252 Engraver fills the need for a portable, inexpensive, dependable and accurate machine to make small dies and molds for plastics, rubber, glass, or die castings, and other forming operations. Master can be reproduced in any of four reduction ratios.

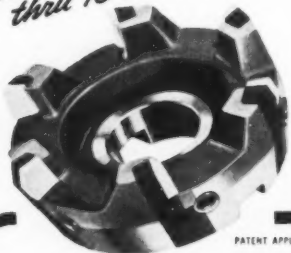


Improved pantograph design simplifies conventional engraving of templates, nameplates, panels, trademarks and machined parts.

Write for 8-page illustrated folder which gives complete details.

MICO INSTRUMENT CO. 78 TROWBRIDGE ST.
CAMBRIDGE, MASS.

*Now—
Right-Hand Mills
carried in stock 5-in.
thru 16-in. dia.*



PATENT APPLIED FOR

cut costs with the GAIRING **E-CON-O-MILL** STANDARD CARBIDE FACE MILL

CUT DOWN TOOL INVENTORY

All cutter bodies, made 5-inch diameter and over, take the same size blades and locks. Blades have different radial rakes for cutting steel, cast iron, and non-ferrous materials.

SAVE ON GRINDING COSTS

New blades come finish-ground, individually cartoned, ready to be put to work. They may be re-sharpened one by one on a carbide grinder. E-Con-O-Mill checking gage insures quick and accurate duplication of cutting edges.

REDUCE DOWN-TIME OF MACHINES

Blades may be removed by hand, without removing cutter body from machine. Locks stay attached to the body. New or re-sharpened blades may be lined up against the cut in the work.

THE GAIRING TOOL COMPANY,
21228 Hoover Road, Detroit, Mich.

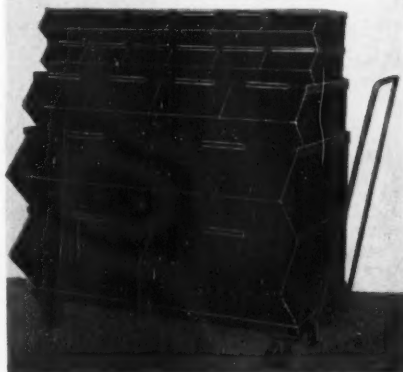


Write for illustrated folder
which gives complete
data and prices.



A STOCKROOM ON WHEELS

These standard Stackbin Sections combined with a truck constitute a movable stockroom; parts can be moved from the stockroom to the assembly or shipping department, with minimum handling. Stackbin Sections, inter-locking steel units of 2 to 6 bins, in 5 different sizes,



stack compactly on the truck and nest together rigidly. Hopper-front bins make the contents easy to see and reach. The bins are made of heavy welded metal with folded edges, finished with baked green enamel. Write for information to:

Stackbin Corporation,
1085 Main St.
Pawtucket, R. I.

HEAVY DUTY ABRASIVE BELT SANDER

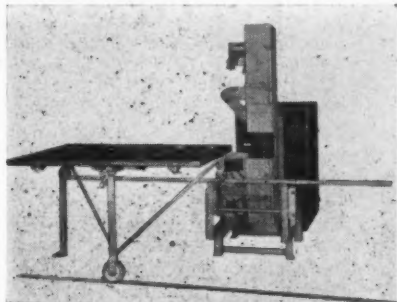
A newly developed heavy duty Dry Abrasive Belt Sander is announced by Henry G. Lange Machine Works, Inc. The manufacturer states that this new sander will increase production and reduce operating and belt costs, while safely filtering the air of all glass dust and particles.

Dry grinding is employed. The use of dry belts has been found to cut belt costs as much as 50%, eliminate washing, water spots and possible damage to silver on mirrors being edged.

The new dust collector is said to have 99% dust collecting efficiency; it exceeds by 20% or more, all state regulations pertaining to collection of dust, making an outside exhaust seldom necessary.

A glass truck of a new design can be equipped with 4 swivel type rubber rollers mounted below the surface of the table and attached to a raising and lowering device, so that the rollers can be raised above the surface of the table.

Abrasive belts measuring 132" x 4" are used. The sander motor is 1 h.p. and the



dust collector motor is 1½ h.p. The glass table is 32" wide by 60" long with extensions opening to 56" wide. For further details, write:

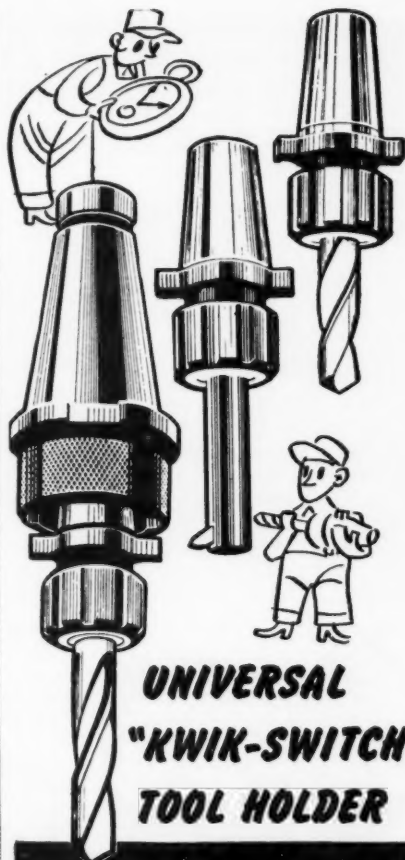
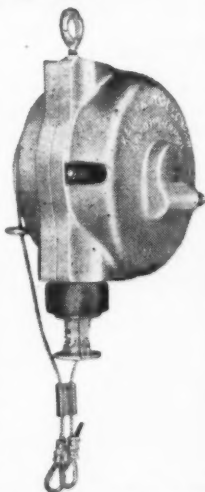
Henry G. Lange Machine Works, Inc.
166 N. May St.
Chicago 7, Ill.

KELLER TOOL BALANCER HAS 20-POUND CAPACITY

A recent announcement from the engineering division of Keller Tool Company states that a new Tool Balancer of 20-pound capacity is now ready for distribution.

The new Balancer, which suspends tools weighing up to 20 pounds over the work area, supplements the Keller Balancer of 10-pound capacity which has been on the market for a number of years. Both units, according to the manufacturer, reduce the loss of production time, protect workers from fatigue, and eliminate careless tool handling. For complete details on this new device, write:

Keller Tool Co., Dept. BB
Grand Haven, Mich.



UNIVERSAL "KWIK-SWITCH" TOOL HOLDER

permits 10 second
tool changes
without
accuracy losses

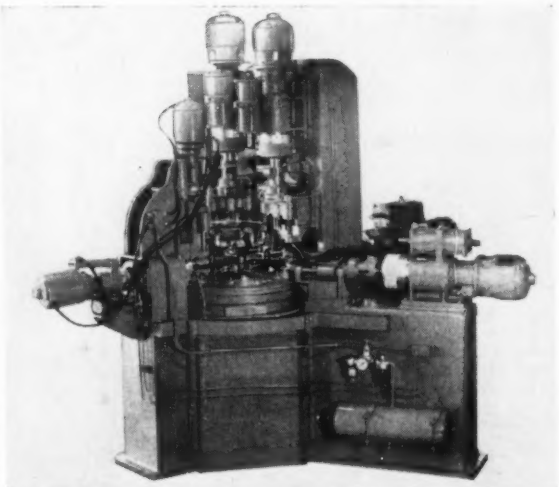
UNIVERSAL
ENGINEERING CO.

FRANKENMUTH 10, MICH.

DRILL UNITS PROVIDED WITH AIR-HYDRAULIC CONTROL

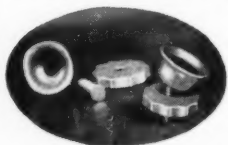
To provide Drill Units for a wider range of manufacturing requirements, the Cleveland Republic Tool Corporation has recently announced their No. 5 Model. This unit is powered by the same combined air-hydraulic system as used in smaller Cleveland Republic Tool models installed in many manufacturing plants for drilling, centering, counter-sinking, facing and milling operations.

The air-hydraulic system incorporates a sealed unit construction which permits their operation in any position. Their design and construction conform to the modern tooling practice of grouping single units on simple welded bases rather than building special machines. Thus, any grouping can be



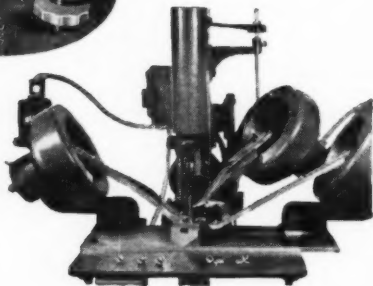
THE PROBLEM:

To assemble three parts: Screw, Bale Cup and Lock Nut for fuel pump sediment bulb . . . Formerly done by hand and then welded one at a time to the bale wire.



THE SOLUTION:

A DETROIT POWER SCREWDRIVER will Automatically assemble up to 30 units a minute, increasing over-all production up to 300%. All component parts are automatically fed from hoppers directly to positioning fixture. The machine automatically cycles and drives screw by means of friction . . . Completed assembly ejected beneath the table and carried to the welding operator. SEND US A SAMPLE ASSEMBLY for estimate and catalog.



DETROIT POWER SCREWDRIVER CO.

2809 West Fort Street,
Detroit 16, • Michigan.

441 STANDARD SIZES OF MARSHALL STEEL PRECISION GROUND FLAT STOCK

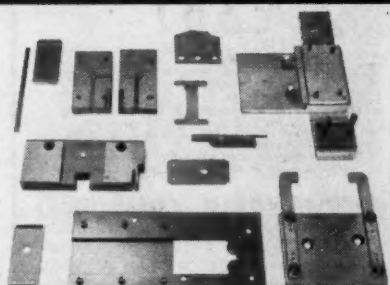
The world's largest range of sizes of precision ground tool steel in three grades are available, ready for immediate shipment and the layout bench.

WATERcrat: A fine grained electric furnace high carbon tool steel. It has been wet ground to remove all bad surfaces and to assure velvet finish of virgin metal.

OILcrat: An outstanding product of careful handling assures you of a fine grained electric furnace oil hardening ground flat stock ready for the layout bench.

AIRcrat: This air-hardening tool steel shows less size change and offers a greater safety in hardening than either of the other grades. Dept. TB

Write for descriptive literature, catalog of sizes and prices.



MARSHALL STEEL CO.
LA GRANGE, ILLINOIS

The Aristocrats of Ground Tool Steel

changed to meet changes in design of the work piece. The manufacturer has, however, standardized the design of four bases, to save time and cost. Only the change of the holding fixture is required when the standard bases are used.

Drill spindle thrust is provided either by the plant's air system or by an auxiliary supply. The operating principle is based upon a rapid advance to an accurate positive stop, then by metered hydraulic feed to another positive stop, and rapid return. The rapid advance travel is consistent to .005" and the work feed to final depth holds to .001". These features save considerable time in multi-station step drilling, since they permit the drill to pass rapidly through the previously drilled portion of the hole, to within a few thousandths of the bottom, before assuming the feed rate of travel. The accurate stop also leaves the bottom of the hole accurately located for the next station. These features are also useful in spotfacing, countersinking, shaft centering and in some cases may supersede intermittent drilling.

Model No. 5 is the largest Drill Unit offered by the Cleveland Republic Tool Corporation. It is available in 2 to 5 h.p., and has a maximum stroke of 6". The

spindle is normally furnished with a No. 4 Morse internal taper and the quill is designed to be adaptable to multiple spindle drill heads. The units are simple in design since there are only three moving parts in addition to the spindle.

For complete specifications and operational data on this new unit, write:

Cleveland Republic Tool Corp.
Union Commerce Bldg., Dept. BB
Cleveland 13, Ohio

ALUMINUM PIPE FITTINGS

Nu-Rail fittings consist of just three basic units, from which fourteen different arrangements can be made. Pipe threading and welding is eliminated with these fittings by the use of two hollow point screws recessed in each reinforcing rib. This greatly simplifies the installation and permits aluminum to compete with threaded steel pipe on an equal cost basis. Uses include desk, hand, stair and guard rails, playground equipment, car ports, portable scaffolds, porch canopies, studio backdrop racks and camera dolies. Further data will be sent upon request. Write:

Reynolds Metals Co., Dept. BB
2500 So. Third St.
Louisville 1, Ky.

**Keeping
The Wheels of Industry
COOL
For 35 Years
MOTOR MICA
TRADE MARK REG. U. S. PAT. OFF.
ANTI-FRICTION COMPOUND
In White Powdered Form**



- ★ Cools hot bearings
- ★ Solves toughest lubricating problems
- ★ Saves wear on moving parts
- ★ Works wonders with cutting oils
- ★ Packed in 5-10-25-50 lb. containers

Wherever there are moving parts, wheels, gears, bearings, die-casting, metal stamping, drawing, cutting and other operations, MOTOR-MICA will definitely improve lubrication . . . abolish lubrication breakdowns once and for all. It has been doing that for many companies ever since 1914. Make sure you get this amazing, time-tested lubricant in your plant at once. It will save precious time and money for you.

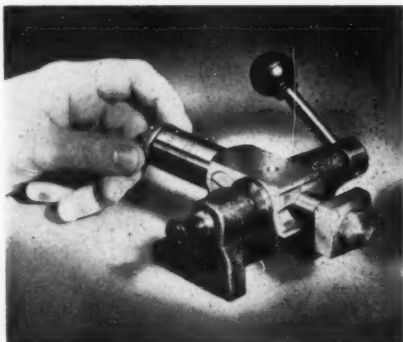
Ask for FREE Sample

Write or Wire Today!

SCIENTIFIC LUBRICANTS CO.
3469 N. Clark St. Chicago 13, Ill.

**THE MIKRO-VISE
A PRECISION SMALL PARTS HOLDER**

The Mikro-Vise, described as a precision tool for holding small parts, has recently been introduced by Metal Items. This small device consists of only two units, the fixture and the vise. It has been designed for rigidity and for versatile positioning for a variety of pieces.



The central shaft design of the vise assures excellent rigidity. The square construction permits versatility. The hardened jaws of the unit are $1\frac{1}{8}$ " side, with a $1\frac{1}{4}$ " jaw opening. The vise is provided with two size V's. It is equipped with insert pins for holding odd-shaped parts. The holding fixture enables setting angular, horizontal and vertical positions.

The Mikro-Vise offers a wide range of possibilities in the holding of small parts for machining operations and bench work. Complete data will be supplied upon request to:

**Metal Items, Dept. BB
820 Sixth St.
Racine, Wis.**

SEAL FOR POROUS METAL CASTINGS

A new liquid resin seals porous, light metal castings. This is the second of a line of products developed by the General Electric Co. for the foundry industry. G-E 12300 liquid resin core binder, previously announced, is said to have found wide acceptance among iron and steel foundries because it permits shorter baking times, gives cores good permeability, and easy collapsibility.

The new material, called G-E Permafil, was developed to permit foundries to salvage castings which otherwise would be rejected because of porosity, and to

permit their use on applications involving oil or vapor pressures. A polyester-type resin, G-E Permafil converts to a tough, clear, solid, free of voids, through the action of catalysts and heat. Castings are sealed by vacuum impregnation and a subsequent short oven bake. G-E Permafil is said to have good storage life under recommended conditions.

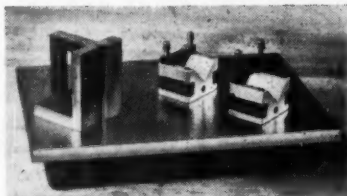
International General Electric Co.
Schenectady 5, N. Y.

NEW SURFACE PLATE WITH ACCESSORIES

A heavy cast-iron surface plate for laying out work, checking flat surfaces, and general tool room and shop use is now available from the South Bend Lathe Works. This plate is made of close-grained iron having a high resistance to wear, and is heat-treated to prevent distortion. The surface is precision ground and all edges are accurately machined. The bottom is heavily ribbed and has three point support. The size is 12"x17"x3" with top $\frac{3}{4}$ " thick.

Toolmaker's V-blocks are also available for use with the surface plate. These V-blocks are made of hardened steel with all surfaces precision ground. They are supplied in matched pairs only. Each block has a clamp with knurled

clamp screws which are cross-drilled for tightening with a rod. Each block is 2-15/16" wide, 1-15/16" high, and 2 1/4" long. Capacity for round work is 1/4" to 2" in diameter.



Another new item for use with the South Bend surface plate is the angle plate at the left in the above picture. This angle plate is precision ground on 6 sides. It serves as a square for laying out and setting up work and is useful for checking and finishing right angle surfaces. Its size is 3 1/4"x3 1/4"x4 1/4", with a 5/8" V-groove.

For complete information on these useful shop accessories, write:
South Bend Lathe Works
384 East Madison St.
South Bend 22, Ind.



HOGGSON BRAND
Since 1849

HAND-CUT STEEL STAMPS Letters & Figures

Deep, hand-cut letters in special-formula steel—result of 90 years of die making—assure clean impressions and long service. Face of stamp is angled for extra strength. Ideal for parts and tool marking and numbering. Also made in reverse for marking molds and dies. At mill supply houses.

Chamfered
corners
for
locating
the base.



HOGGSON & PETTIS MFG. CO., New Haven, Conn.

WRITE FOR FREE FOLDER of USES of Cerro Alloys

if you want to save
TIME, LABOR, MONEY

A new folder, just released, giving the complete list of known uses and properties of low-temperature-melting Cerro Alloys is now available on request to anyone interested in learning whether one or more of these unusual metals can improve their product or process. Send for the folder today, by clipping the coupon below, and then look over the "101" applications. Check those that might be of interest to you and receive complete information and instructions. You may discover the means of saving valuable TIME, LABOR AND MONEY.



Trademark
Registered

CERRO DE PASCO COPPER CORP.

Dept. 7 • 40 Wall St. • New York 5, N. Y.

Please send me
"Cerro Alloys Applications".

Name..... Title.....

Company.....

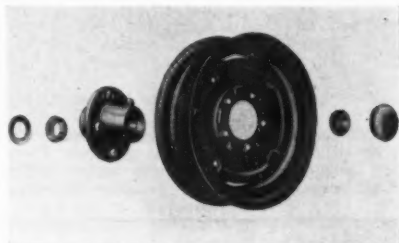
Address.....

WHEEL GROUPS FOR MANY APPLICATIONS

A comprehensive line of drop center, disc wheels in light, medium and heavy duty range has been introduced by French & Hecht Division, Kelsey-Hayes Wheel Company.

Offering modern, safe wheel mounting for wagons, trailers, scoops, sprayers and many other portable equipment, these wheels are sold as a group (kit or unit) comprising the rim and disc, hub, bearing cones, grease seal and cap with or without brakes (brakes are available in certain heavy duty sizes only) and with bent or straight spindles.

The range of load per wheel in the several classifications is: light, 1200 to 1500 lbs.; medium, 1500 to 1750 lbs.; heavy, 1750 to 2,000 lbs.



In the light duty wheels, sizes are available to accommodate 6.00x9", 5.00x12", 5.50x16", 6.00x16" and 6.50x16" pneumatic tires. Medium duty wheels are in the following rim sizes: 9x4.00, 15x5.00, 16x4.00, 16x4.50 and 16x5.50. Heavy duty wheels are available in rim sizes 9x4.00, 15x5.00 16x4.50 and 16x5.50. Descriptive bulletins including dimension diagrams of spindles and brakes are available. For complete data, write:

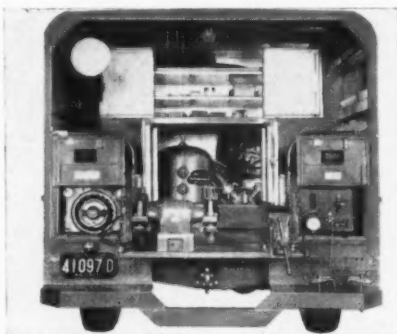
French & Hecht Division, Dept. BB
Kelsey-Hayes Wheel Co.
Davenport, Iowa

COMPRESSOR FOR FIELD USE

A mobile field service compressor, type PW-308, includes all of the equipment necessary for the servicing of military, mining, construction, oil field, agricultural or other machinery operating over large areas and distant from service centers. It is mounted on a 4-wheel drive truck. Main equipment items include a 300 amp. welder and 8 K.W. a-c generator. These are driven direct from the truck engine through a model P-80 Davey heavy duty power take-off. Utilization of this take-off eliminates the necessity for separate

engines for each piece of equipment. The resultant space savings provide room for other needed equipment.

Power for the operation of the unit's high pressure lubrication equipment is provided by a Davey compressor operat-



ing at 150 lbs. pressure. Other equipment in the unit assembly includes: oxy-acetylene welding, cutting and brazing outfit; 8" electric motor-operated bench grinder, portable arbor press, floodlights;

7500 lb. winch, a complete complement of service tools, electric drill, etc. The all-steel utility and service body provides space for the transportation of the driver and six passengers. The unit is replete with tool boxes and storage bins. Body is waterproof and can be locked securely to prevent tampering or theft.

Davey Compressor Co., Dept. BB
Kent, Ohio

MORSE FLEXIBLE COUPLINGS

Stock silent chain flexible couplings, designated as series DSC, are rugged, of all steel construction and combine maximum power transmission capacity with minimum space requirement. Two sprockets wrapped with a center guide Morse Silent Chain assures easy installation. Disconnection is accomplished quickly and easily by either of two methods, by unwrapping of the chain after removing the single connecting pin, or by moving either sprocket endwise out of mesh with the chain. Stock bores range from $\frac{1}{2}$ " to $2\frac{7}{8}$ " with horsepower capacities up to 119 h.p. at 2000 r.p.m. Complete specifications will be furnished upon request to:

Morse Chain Co., Dept. BB
7601 Central Ave.
Detroit 8, Mich.

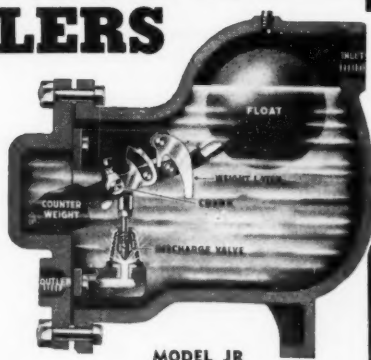
Nicholson Air Traps Assure

POSITIVE DRAINAGE of AFTERCOOLERS

by 4 Advanced Features

- 1) Extra large discharge capacity; valve operates instantaneously to discharge water, oil, dirt.
- 2) Positive leak-proof valve prevents air loss.
- 3) Of stainless steel where it counts.
- 4) Not dependent on buoyancy of float. Three types, press. to 1500 lbs., for draining aftercoolers, separators, etc.

CATALOG 448.

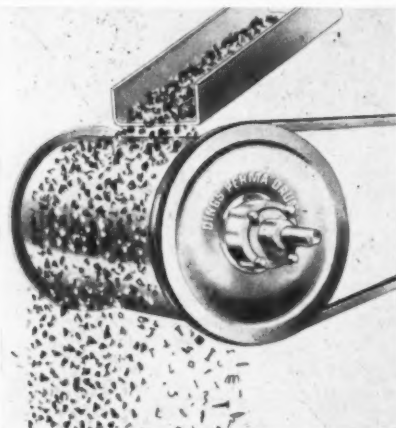


MODEL JR

W. H. NICHOLSON & CO., 117 Oregon St., Wilkes-Barre, Pa.

DRUM-TYPE MAGNETIC SEPARATOR

A new permanent drum type, non-electric Alnico magnetic separator, for



automatic tramp iron removal, can be installed at the discharge end of chutes, spouts and conveyors for processing grain, rubber, glass, chemicals, plastics,

minerals, coal, sand, textiles, metals and powders. It has a circumferential pole design for uniformity of magnetic field across the drum width. The non-magnetic wear and abrasion resistant manganese alloy steel drum shell revolves on sealed, self-aligning ball bearings while the non-electric Alnico magnet inside the drum shell remains stationary. The non-magnetic material flows over the drum shell in a normal trajectory. The tramp iron holds fast to the drum by the magnetic pull, dropping off when it passes out of the magnetic field. No discharge aids are necessary. There is no drum shell wear from adhering tramp iron. Complete information is available upon request. Write:

Dings Magnetic Separator Co.
4740 W. Electric Ave., Dept. BB
Milwaukee, Wis.

MORTON FIXTURE CLAMP

This new fixture clamp, introduced by Morton Machine Works, will clamp a casting through the bored hole onto a pilot plate. Clamping is by means of an alloy tee bolt engaging a hardened insert which is furnished with the clamp. This insert is ground for a press fit in

CARBOLOY TIPPED SCRAPER BLADES

Especially good for hard alloy iron and extremely hard bronze castings. If you are using Anderson Hand Scrapers it is not necessary to buy complete new scrapers in order to use carboloy tipped blades. Simply remove high-speed blade and slip in the Anderson Carboloy Tipped Blade. Available in three widths.



by *Anderson*

THEY LAST 8 TO 10
TIMES LONGER

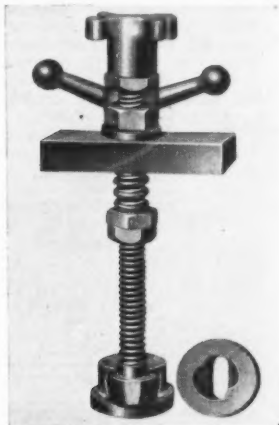


Send for Bulletin 9-5

ANDERSON BROS. MFG. CO., Rockford, Ill.

Hand and Power Hydraulic Presses, Balancing Ways, Roto Checkers, Hand and Power Scrapers, Spotters.

the bottom of the pilot plate. The tee bolt can be cut of to suit any height of job. The hand knob used as a handle



can also be adjusted to suit. The spherical collar nut or steel ball handle used for tightening are optional equipment.

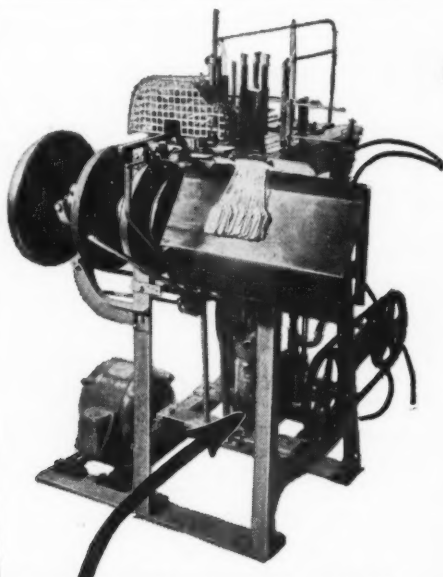
Lock nuts and spring can also be adjusted for height. Additional information will be sent upon request to:

Morton Machine Works
2422 Wolcott St.
Detroit 20, Mich.

CLEANER FOR ZINC BASE DIE CASTINGS

A new, improved cleaner, Z-54, for reverse current cleaning of zinc base die castings prior to electroplating is composed of carefully balanced, anhydrous alkaline ingredients plus a combination of synergistic surface active agents. Usually, Z-54 is employed after a proper pre-cleaning operation such as spray washing, emulsion cleaning, or vapor degreasing. Recommended concentration is five ounces to the gallon. Improved cleaning is achieved because solution temperatures may average between 180° and 190° Fahrenheit. Substantial reduction in blistering has been reported by initial users of the product. Further information is available upon request to:

Special Chemicals Division
Pennsylvania Salt Mfg. Co.
1000 Widener Building
Philadelphia 7, Pa.



LEIMAN BROS. ROTARY VACUUM PUMPS

More Tags Strung per Hour

Down Go Costs

Up Go Profits

More Tags or More

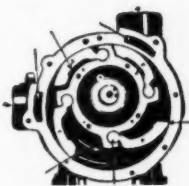
Anything — Try

LEIMAN VACUUM PUMPS

for Greater Production
on Machines or Processes

Submit Your Problem

they take
up their
own wear



LEIMAN BROS. INC. 169 Christie St., Newark 5, N.J.

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

233

Multiply SMALL PARTS DRILLING AND TAPPING PRODUCTION



Ettco-Emrick

SYSTEM OF

MULTIPLE SPINDLE HEADS

Shops all over the country are reporting production increases up to 500% or more with the Ettco-Emrick System of Multiple Heads.

The System provides a complete production unit of multiple head and work-holding fixture engineered for fastest handling of the part and for drilling or tapping the maximum number of holes at each stroke of the press. Find out how the System can multiply your drilling and tapping output. Send sample part and hole data for quotation. No obligation.

*Write for Bulletin No. 3
for complete details*

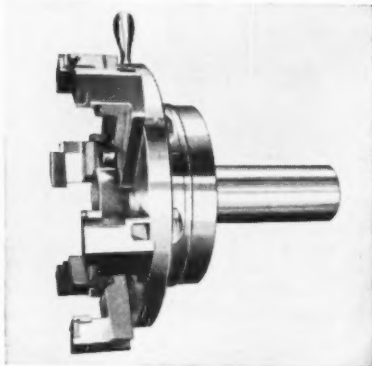
ETTCO TOOL CO.

596 Johnson Ave., Brooklyn 6, N. Y.
Boston • Portland (Conn.) • Detroit • Chicago

**DRILL & TAP CHUCKS • TAPPING ATTACHMENTS
MULTIPLE DRILLING & TAPPING HEADS
DRILLING & TAPPING MACHINES**

LANDIS DIE HEAD FOR VALVE SEAT RINGS

The Engineering Department of the Landis Machine Company, has developed an internal-trip type die head for threading valve seat rings up to diameters of 14 $\frac{3}{4}$ ". This die head is normally furnished without the internal trip when the valve seat rings are chucked and faced in relation to the chuck. This arrangement permits setting the stops on the turret so as to allow the normal pull off action to trip the die head.



For thread sizes larger than 9-5/16" diameter, an enlarged closing ring is mounted on the head to support the oversize chaser holders. Varying thread lengths of different valve seat rings can be taken care of by the height of the oversize holders.

The chasers used are six per set, having a 30° short roughing and finishing throat. These chasers are economical in view of their usable length and interchangeability. The coarsest pitch recommended is 8 threads per inch. The chaser holders have a diametrical adjustment of approximately $\frac{3}{16}$ " on the larger size. This permits the same chaser holders and chasers to be used for different diameters. Write for additional information and specifications to:

**Landis Machine Co., Dept. BB
Waynesboro, Pa.**

SCRAP CENTERS SALVAGED WITH COLMONOY TIPS

With the advent of Colmonoy wear resistant tips, it is no longer necessary to scrap lathe or grinder centers when they are worn back too far for further grinding. The Colmonoy tip or cap can be silver soldered to the wear end of

the scrap center, facilitating indefinite use for years, by merely retipping when necessary.

These Colmonoy tips are claimed to wear at least seven times longer in between grinding than high speed steel.



These tips are now available in their cast form or already applied to standard size centers and finished ground. For complete information write:

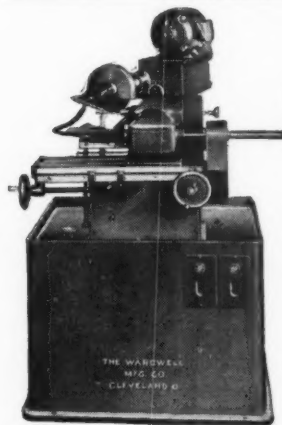
Diamonds & Tools, Inc., Dept. BB
19345 John R. St.
Detroit 3, Mich.

PHOENIX COMPOUND FOR HARDENING AND ANNEALING STEEL

Phoenix Brand Non-Scaling Compound is used in the hardening and annealing of steel to prevent decarburization, scaling, pitting, surface film and excessive



discoloring during the heat treating processes. It is a powder, (not a salt solution) which is simple to use in any type furnace except the bath type. This compound which is being offered for the first time to industry at large is a product of the Parker Stamp Works, Inc.



SPIRAL FLUTES FROM $\frac{1}{16}$ " DIAMETER-ANY STOCK!

WARDWELL UNIVERSAL 90FS AUTOMATIC FLUTE GRINDER

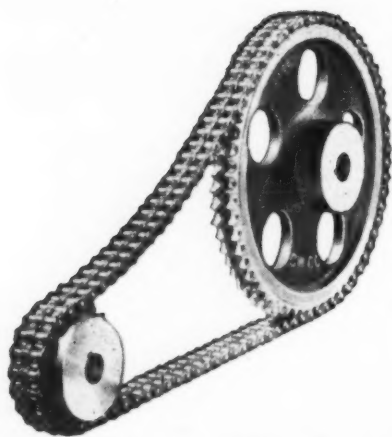
- Automatic Index Feed
- Automatic Feed of Grinding Wheel
- Work Spindle is automatically locked in position after indexing

Grinds spiral flutes from solid in tools such as: Drills as small as $\frac{1}{16}$ " in diameter—Spiral or straight taper reamers—spiral or straight milling cutters and end mills—sharpens saws up to 12 inches in diameter and in gangs up to $7\frac{3}{4}$ " long.

**THE WARDWELL
MANUFACTURING CO.**
3165 FULTON ROAD
CLEVELAND 9, OHIO

WRITE TODAY FOR BULLETIN 90FS

Complete Wardwell Catalog describing more than 30 grinding, sharpening, setting and swaging machines also available.



CULLMAN SPROCKETS

*Over 80,000 Sprockets and
80,000 Feet of Chain
Now in Stock*

There are important advantages in bringing your sprocket requirements to Cullman Wheel. Chief among these is the fact that in fifty-five years of specialization in the design and manufacture of sprockets and kindred power transmission parts, has built up the amazing total of over eighty thousand sprockets in stock. Invariably your requirements can be met quickly from this great sprocket and chain inventory. This always brings the cost down. Quick delivery is also available at Cullman on special made to order sprockets. Send your blue prints for recommendations and estimates.

*Be sure to write for the Cullman
Sprocket Catalog today*

CULLMAN WHEEL COMPANY

1350 W. Altgeld St.,

Chicago, Ill.

It was developed 30 years ago in an effort to produce scale free heat treated dies and tools, by a chemist, who is now president and chairman of the board of the Parker organization.

Parker's products include steel dies of every size and description, from marking dies the size of a common pin to plastic molds and die casting dies for radios and automotive trim.

For complete data on the Phoenix Non-Scaling Compound, write:

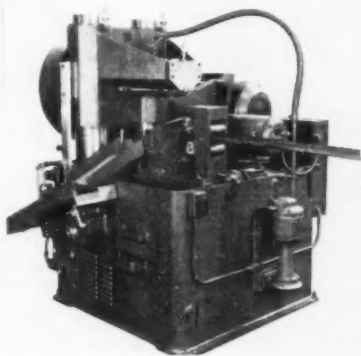
Parker Stamp Works, Inc.

Dept. BB

Hartford, Conn.

KENT-OWENS MILLING MACHINE WITH AUTOMATIC BAR FEED

An automatic bar feed machine for cutting off or multi-milling operations has been introduced by Kent-Owens Machine Co. The bar is placed in the fixture and the operation is as follows: the head, which carries the cutter, travels in a down direction until the cutter approaches the parts to be milled or cut off. At this point, the head automatically goes into feed, and feeds until the part is cut off or milled then reverse and returns in rapid traverse. During the reverse stroke, the finished parts are automatically ejected and the bar is moved into place so that the next part can be milled. This operation is continuous until the bar is used up.

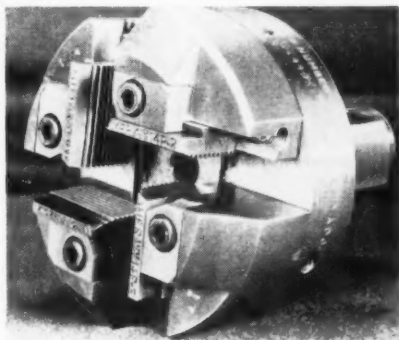


This is one of many machines being built to special requirements by this firm. Kent-Owens also produces a wide range of standard models, including hydraulic and hand operated milling machines. For further information, write the manufacturer:

**Kent-Owens Machine Co., Dept. BB
Toledo, Ohio**

LANDIS SOLID ADJUSTABLE DIE HEADS

This die head is designed for use on Automatic Machines for threading street ells and similar cast iron fittings where clearances are limited between the die



head and the machine. The diameter of the die head is $3\frac{3}{4}$ " and to provide further clearance, the chaser holders are beveled off at a 45° angle.

The die head consists of a heady body with the chaser holders mounted on the

face of the head body. Individual adjustment is provided for each chaser, holder, which permits a plus or minus adjustment of approximately $1/32$ " on the pitch diameter. Although the same head body can be used, a different set of chaser holders is required for each diameter. The over-all length of the head depends upon the type of mounting used.

The head shown above is driven by means of square on the shank and it is centered by a cylindrical portion of the shank. It is held in position by means of a draw rod through the spindle. This head uses chasers $15/16$ " by $1\frac{1}{4}$ ", the same size as are used on the Little Landis Head. The head body is made of air hardened steel. The chaser holders are made of alloy steel and heat treated to insure strength and long life. The head is only recommended for use on cast iron and brass fittings. For complete specifications, write:

Landis Machine Co., Dept., BB
Waynesboro, Pa.

The Baker Industrial Truck Division of The Baker-Rauling Company, Cleveland, announces the appointment of John A. Matousek as manager of manufacturing.



New improved design—welded steel body— $4\frac{1}{2}$ " dual insulation—uplifting counter-balanced door—heavy duty element embedded in all four sides of heating chamber.

It's new
TEMCO
SERIES 1600
ELECTRIC FURNACE

FOR HEAT TREATING TOOLS,
DIES, PARTS AND GENERAL LABORATORY WORK

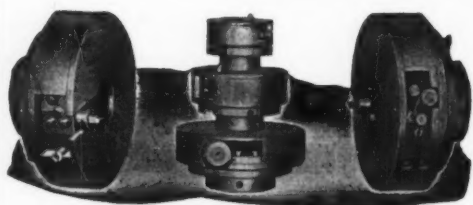
New fast-heating sturdy TEMCO model built for continuous use to 1650°F ., intermittent to 1900°F .. Supplied with either 500 series TEMCOMETER stepless temperature controller and indicator (illustrated) or with VERITRON electronic controlling pyrometer.

MODEL	CHAMBER W" H" D"	VOLTS 50/60 CY.	WITH TEMCOMETER	WITH VERITRON
1625	$5 \times 4\frac{1}{2} \times 9$	115	\$140.00	\$262.50
1620	$5 \times 4\frac{1}{2} \times 9$	230	142.50	262.50
1635	$5 \times 4\frac{1}{2} \times 13\frac{1}{2}$	115	167.50	280.00
1630	$5 \times 4\frac{1}{2} \times 13\frac{1}{2}$	230	170.00	280.00

Write for literature and dealer's name.

THERMO ELECTRIC MANUFACTURING CO.

486-9 W. Locust St., Dubuque, Iowa



MUMMERT-DIXON FACING HEADS with Automatic Feed

One-way Tool Feed — 6, 9 and 12" sizes.

Two-way Tool Feed — 9, 12, 16, 20, 24, 30, 36, 40 and 46" sizes.

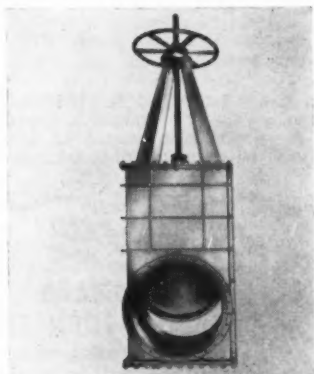
Save many costly set-ups.

Bulletin No. 4141 Gives Full Details

MUMMERT-DIXON CO., 122 Philadelphia St., Hanover, Pa.

VALVE FOR CORROSIVE FLUIDS

A large slide or gate valve has recently been made, for use in a prominent coke oven by-product plant as part of the ammonium sulphate unit. Operating con-



ditions are not only severe but highly corrosive. When the valve is closed, a continuous flow of water is provided at 3 p.s.i. within the valve body so as to

provide a positive water curtain at all times. The gas in the lines is at 2 p.s.i. so that any leakage through the valve seats flow into the gas chamber.

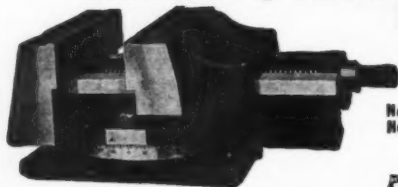
Suitable drains in the lines on each side of the valves carry by-products gas with a mild concentration of sulphuric acid at about 140°F. The valves are 42" in diameter opening and are of the double disked wedge locking type. The valve housing is a 5/16" Monel weldment throughout, with all internal parts of rolled stock or castings. The valve is designed to withstand a pressure of 5 p.s.i. with manual control by means of a 44" diameter handwheel. The overall length of the valve from end of shaft to base of valve body is 16 feet, and the weight of the complete unit is 4800 lbs.

**W. S. Rockwell Co., Dept. BB
Fairfield, Conn.**

PORTABLE HYDRAULIC MAINTENANCE TOWER

A hydraulically-raised, manually-operated rolling work tower is controlled from the work platform and is designed for one-man operation to speed overhead factory and building maintenance. It may be raised or lowered rapidly and with little effort. The tower, of all steel

SUPERIOR QUALITY AND WORKMANSHIP IN PLUNKET VISES



SQUARE BASE SHAPER VISE

The Shaper Vise has graduated swivel base and tongue in center to fit slot in table, and has holes for bolting down. In ordering this vise give size of slots in Shaper Table, also distance from center to center of slots.

No. 40, 10" jaws, 2 1/4" deep, opens 8 1/2". Weight 125 lbs. **\$84.00**

No. 4, 8" jaws, 1 1/2" deep, opens 5". Weight 45 lbs. **\$62.00**

Our complete line includes Vises for Drill Presses, Milling Machines, Shapers and Grinders.

Prices are net, f. o. b. Chicago. Write for illustrated folder today. Dealers inquiries solicited.

J. E. Plunket Machine Co. 1823 W. Lake St.
Chicago 12, Ill.

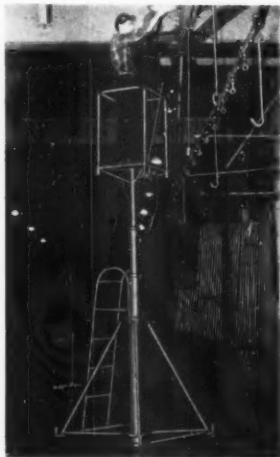
Get Out Those BROKEN TAPS!

Get 'em out with "WALTON" TAP EXTRACTORS, the inexpensive tools for removing broken taps from all kinds of work. Shop proven; fast; economical. See your jobber, or write us for Folder No. 12 and details of free trial offer.

THE WALTON COMPANY
Hartford 10, Connecticut



construction, is easily rolled to any location on the large swiveling casters with rubber tires. Tower is used for washing of lighting fixtures, servicing of overhead motors, unit heaters and conveyor systems; work on ceiling level ducts for



electric cable and bus bars, compressed air lines, line shafts, steam pipes, etc.

It will perform work at any platform level from 7 to 17 feet above the floor, permitting most workers to reach equipment as high as 22-23 feet. The platform is raised on a telescoping ram by means of hydraulic power. For complete information, write:

Safway Steel Products, Inc.
6228 W. State St.
Milwaukee 13, Wis.

GOODRICH OXY-ACETYLENE HOSE

A twin oxy-acetylene hose in which two lengths, one red and the other green, are joined by a thin strip of rubber has been introduced under the brand name Duo-Weld. The molded finish cover is smooth, tube exceptionally smooth and uniform. Reinforcement consists of one braid of high tensile hawser cord cotton yarn which in the 1/4" size gives strength comparable to the standard two braid single line construction. The rubber strip joining the two hose lengths is of high quality rubber stock with extreme flexibility. The strip also allows the hose to be separated into single lengths, when that is desirable, without tearing into the cover of either length.

MACHINISTS—TOOL AND DIE MEN—SHEET METAL WORKERS—ETC.

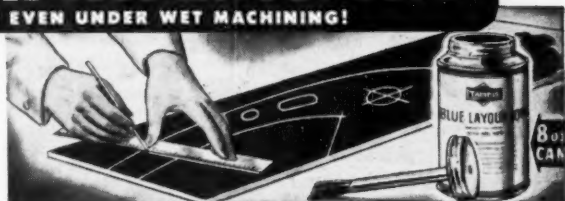
FREE SAMPLE BLUE LAYOUT DOPE

STAYS PUT EVEN UNDER WET MACHINING!

Speeds layout on all metals. Dries fast. Oil resistant. Won't chip, crack or flake off. Comes in handy 8 oz. brush-in cans, pts., qts., drums. Order now!

TAMMS INDUSTRIES, INC.
(formerly Tamms Silica Co.)

228 N. LaSalle St., Chicago 1, Ill.



When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

239

VIMCO Light
BETTER SIGHT!

VIMCO Light
INCREASED ACCURACY!

VIMCO Light
LOWER COST PRODUCTION!

Write for Bulletin 74
VIMCO MFG. CO., 109 Brayton St., Buffalo 13, N.Y.

HAND SPRING WINDER

NO LATHE NECESSARY

1. Ideal for tool room & maintenance shop
2. Easily operated by hand
3. No lathe necessary
4. Mandrel capacity to 1 1/2"
5. Wire capacity up to .229" diameter
6. Pitch capacity up to 1"
7. Clamps in your bench vise

4 SIZES
Priced from \$15 to \$35
DELIVERY ONE WEEK

Write for Complete Catalog

MONTGOMERY & CO., Inc.
Since 1876

53 PARK PLACE, NEW YORK CITY

The hose is being made in 50, 25 and 12 1/2 foot lengths, with the 3/4" size being stocked. Each length is separated approximately 18" from each end and secured with a metal ferrule at the separation point. Write for further information to:

B. F. Goodrich Co.
Akron, Ohio

NEW INDICATING SNAP GAGE

The dial indicator warns operator in time to reset the machine or tool. He gets fast, positive information on the dimension of the work. Dial indicator has cushioned movement, and can be faced in any position for machine or bench use. Indicator is at top for easy reading. Contact point is spring-mounted and guarded from sidewise blows. Spring-loaded point also supports weight of hand and gage. Upper and lower contacts are tungsten carbide tipped.



Five sizes cover all dimensions from 0" to 6". The two small sizes have cast iron frames; three large sizes have aluminum frames with insulated grips. A bench stand is also available. Size capacities are as follows: 0" to 1", 3/4" to 2", 1 3/4" to 3 1/4", 3" to 4 1/2", 4" to 6". The device can be had with either B5M-C (.0005") Federal indicator or B21-C (.0001") indicator. Complete details will be furnished upon request by:

Federal Products Corp.
1144 Eddy St.
Providence 1, R. I.

SUPERSHEAR USES COMPOUND LEVERAGE FOR CUTTING

A new shear for heavy duty sheet metal cutting is announced by Super Manufacturing Corporation, under the trade-name Super-Shear. The tool cuts steel sheets, rod and bar stock up to $\frac{1}{8}$ " thick and even thicker sections of non-ferrous metals.

As shown in illustration below, the Supershear employs a combination of

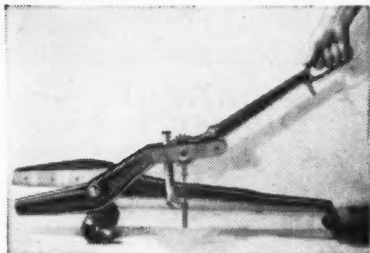
ciple applied in big power shears.

In cutting larger sheets up to $\frac{1}{8}$ " thickness, the shear is placed on the floor, supported by rollers attached to the lower jaw and held in position by a foot pedal. One or both hands may then be applied to the operating handle. The rack and gear may be disengaged, permitting the tool to be used as a straight hand-shear. The lower handle may be placed in a vise for semi-permanent use as a bench shear.

The manufacturer states that a recent test by the Armour Institute of Technology showed this shear capable of cutting $\frac{1}{8}$ " thick sheet steel with 60-pound pressure on the handle, although a pressure of 145 pounds was required to do the same job with ordinary shears.

The overall length of Supershear is 36", the length of blade is 9", weight 27 pounds. The device is guaranteed to cut any kind of sheet metal, wire, and bar stock up to $\frac{1}{8}$ " thickness. For full details and illustrated circular, write:

Super Mfg. Co., Dept. 29
4538 W. Fillmore St.
Chicago 24, Ill.



compound lever, rack and gear to multiply the force exerted on the operating handles; this was developed from a prin-

YOUR "SPECIAL BUSHINGS"

May Be Our Regular
STOCK ITEMS!

Ready for Immediate Delivery

TWO complete bushing standards, the A.S.A. Standard plus our own Acme Standard, enables you to obtain bushings from stock that might otherwise require special manufacture. Results in faster delivery, lower cost. Write for catalog.

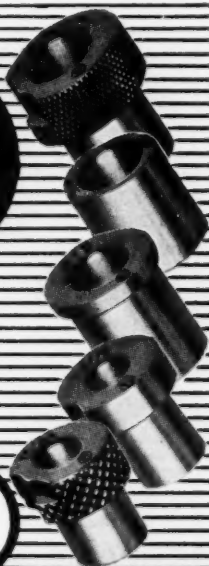


Accurate
Interchangeable
Concentric

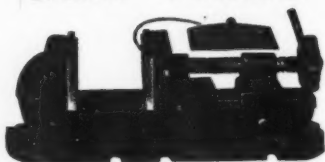
Acme Industrial Company

Makers of Hardened and Ground Precision Parts
210 N. Laflin Street • Chicago 7, Illinois

THE SERVICE SHOP TO INDUSTRY FOR MORE THAN 25 YEARS



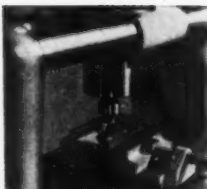
GEM VISES



**J. E. MARTIN MACHINE WORKS
SPRINGFIELD, OHIO**

Does the Most Difficult Milling Jobs!

Palmer Milling Attachment quickly converts bench lathe to milling machine. 8" longitudinal cuts, 3 1/4" vertical cut. No chatter. Precision Sealed for life ball bearings. Complete with vise \$99.50.



Palmer INDUSTRIES

6149 So. Sangamon St.
CHICAGO 21, ILL.

BEVEL GEARS

**PROMPT DELIVERY
UP TO 12" DIAM. - 3 D. P.
CUTTING ONLY or COMPLETE GEARS
LATEST GLEASON EQUIPMENT**

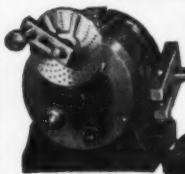


Greaves MACHINE TOOL CO.

86 2013 Eastern Ave.
Cincinnati, Ohio



CARROLL DIVIDING HEADS



Catalog
on
Request



3 SIZES - 4 MODELS - 6" to 12"
TROYKE MFG. CO.
4422 APPLETON ST. CINCINNATI 9, O.

PORTABLE METAL PUNCH



Model P 20

HEAVY DUTY ... FAST

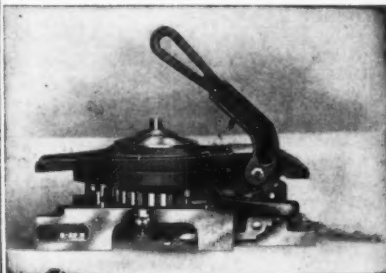
For punching holes in steel up to 1/4" thickness, you can do it faster and easier with the P20 Portable Punch. All Steel construction and weighing only 17 lbs., the P20 has compound lever action . . . no screws or ratchets . . . machine cut heat treated gears. Will punch close. It's universal . . . can be used in a bench vise or on the floor. Punches and dies available from 1/8" to 1/2" dia. in 1/32" units. Every shop needs several of these handy portable punches. Immediate shipment. Write today for prices.

CONRAD MACHINE CO.

Route 53

Lombard, Ill.

AUTOMATIC CHUCKING AND INDEXING FIXTURE



- 1.—1800 light cuts per hour.
 - 2.—Either horizontal or vertical position.
 - 3.—Collets changed instantly.
 - 4.—Automatically knocks piece out.
- Model D—Ratchet indexing only—1" cap.
Model E—Both degree and ratchet indexing
—Capacity up to 1".
Model F—Both degree and ratchet indexing
—Capacity up to 2 1/4".
Write for Folders

J. W. DEARBORN

• Ansonia, Conn.

DIP TANK FOR PLASTIC COATING OF TOOLS AND PARTS

The H. McNaughton Co., announces a new dip tank or melting pot known as "Electrodip." It is thermostatically controlled, thoroughly insulated, fast heat-



ing and is provided with an aluminum casting dip-compartment designed for maximum usefulness. The tank is used for dipping ethylcellulose and other re-

movable plastic coatings on parts, tools and dies. As an oil bath, it is used to transfer heat at controlled temperature to irregular-shaped containers.

Heat is uniformly transferred through thick aluminum walls to heat or melt, without charring, viscous compounds, waxes, greases, etc. The large top opening and sloping walls with rounded corners permit all parts of the interior and bottom to be easily reached for dipping operations or for cleaning out.

Any temperature set on the calibrated dial is held within 1° F. The casting has a large ledge to catch any overflow; this also makes it spill-over proof. A pilot light indicates when a set temperature is reached.

Closed type heating elements of 1000 watts, and thermostat range 60 to 250° F., or 200 to 500° F., are installed for either 115 or 230 volts, as specified. The overall size of the tank is 12" x 12" x 10" high. The aluminum casting dip compartment tapers from 7" x 7" at the top to 5" x 5" at the bottom by 6" deep. For complete information, write:

The H. McNaughton Co., Dept. BB
201 Parsons St.
Kalamazoo, Mich.

Beverly THROATLESS SHEAR



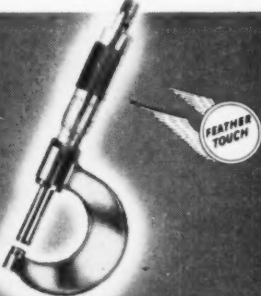
- UNIVERSAL . . . makes intricate, angular, radii and straight cuts with equal efficiency.
- Positive rake produces neat, clean edges free of burr.
- Free-cutting . . . handles lightest material without distortion.
- Compound leverage . . . great power with little effort.
- High grade tool steel blades adjustable for wear. Easily replaced.
- B-3 Model (illustrated) has ballbearing hold down for easy control of heavier gauges. Beverly Shears also available with H.C.H.C. blades for handling Stainless.

See your Dealer . . . or write direct for information and illustrated Catalogs.

Made in 3 models to handle 14 gauge, 10 gauge and 8". Welded, all-steel stands available for Beverly Shears.

The BEVERLY SHEAR
MFG. Co.
3005 W. 111th St.
Chicago 43, Ill.

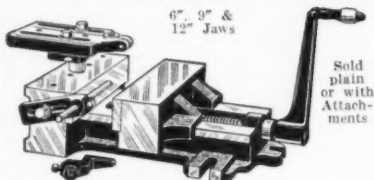
TRADE
TUMICO
MARK



TUBULAR MICROMETER CO.
ST. JAMES, MINNESOTA, U.S.A.

S A V E

With Precision Vises



Multi-purpose—shown above, with many attachments optional, saves untold tool-making hours by serving as a ready-made jig and fixture.

Centering—both jaws move toward center, at double-fast rate. Centers work of varying sizes.

Swivel—with exclusive Adjustable Zero Pointer. Drilled to take Attachments if desired.

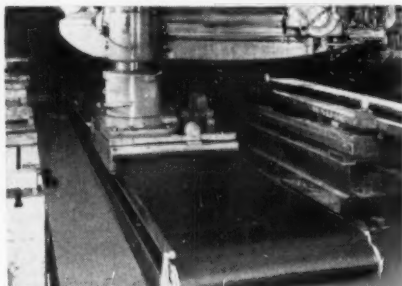
Request Illustrated Price Bulletin 44

GRAHAM MFG. CO. 52 Bridge Street
East Greenwich, R. I.

TOSCO WAY CURTAINS FOR MACHINE TOOLS

The Tosco Way Curtain for protecting ways and operating mechanism on machine tools was developed in 1935, and has been improved several times since, both in workmanship and material. A specially developed coil return spring is used which has many times the life of an ordinary spring. The new curtain material is neoprene-coated Fibreglass, impervious to oil and cutting compounds. It will not stretch nor sag, and it is fire-resistant. Seamless steel tubing and ball bearings are used in the roller, giving them free, balanced action.

Tosco Way Curtain assemblies are now standard equipment on certain makes of boring machines and welding machines,



and are specified on many special purpose machines. The illustration above shows a curtain protecting the ways of a large radial drill.

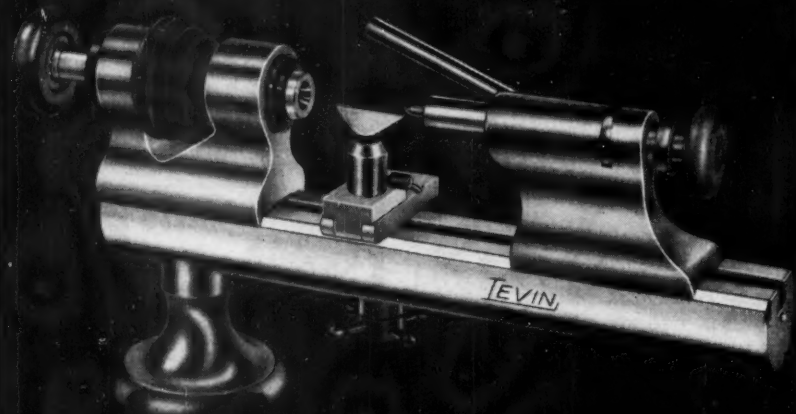
Tosco Way Curtains are to be found in the die shops of some of the largest automobile and auto accessory manufacturers. Sizes range from rollers six feet long and 6" in diameter, to small rollers 1" in diameter. The manufacturer will supply complete installation data and diagrams upon request. Write:

Tool Supply Co., Dept. BB
40 Custer Ave.
Detroit 2, Mich.

Dr. J. E. Shepherd, engineering director for electron tubes at the Sperry Gyroscope Company, and a director of the Institute of Radio Engineers, was recently announced as the 1949-50 president of the Technical Societies Council of New York, Inc. Other officers elected are: vice president, **Dr. Robert Calvert**, of the American Chemical Society; secretary, **Joseph J. Preisler**, of the American Society for Metals; treasurer, **W. H. Rivers**, of the Society of Motion Picture Engineers.

DELICATE WORK

REQUIRES A SENSITIVE LATHE



The ideal lathe for small parts. Turns out work faster . . . produces finer finish . . . costs less to operate.

* Precision pre-loaded ball bearing spindle *

Bed 12" long * Center height 2" * Collet capacity

either 5/16" or 3/16" * Complete line of accessories

Send today for illustrated literature.

GENUINE **LEVIN** TOOLS
CARRY THIS TRADEMARK

LOUIS LEVIN & SON, INC. DEPT. M
782 E. PICO BLVD., LOS ANGELES 21

Roger E. Robertson has been appointed to the staff of the National Bureau of Standards, Washington, D.C., where he will conduct engineering research for the guided missile projects of the Electronics Division.

Appointment of J. D. Greensward as general manager of the Norwood (Ohio) works of Allis Chalmers Manufacturing Co., was announced by W. C. Johnson, executive vice president in charge of the firm's general machinery division. Robert S. Flehiem has been promoted to assistant to W. C. Johnson.

Wayne Standard Wamsley has joined the staff of the National Bureau of Standards, Washington, D.C., where he will conduct radar, radio, and electronics research in the Ordnance Engineering Laboratory of the Electronics Division.

Robert Goodrich, formerly with Oak Ridge National Laboratory, has joined the staff of the National Bureau of Standards, Washington, D. C., where he will conduct research in the Ordnance Mechanics Laboratory of the Electronics Division.

Air-O-Chek

The Valve
internal
with the
fulcrum lever



An ingenious
inside lever ar-
rangement opens
valve. Quick acting. Self
closing.

Send for bulletin.

AIR-WAY PUMP & EQUIPMENT CO.

1054 N. Kilbourn Ave., Chicago 51, Ill.

Machine Shop For Sale:—

Located in Greenville, Texas, county seat of Hunt county. Having a population of 22000. Good schools, churches, and a good climate. This shop has a good business already established. Work consists of Power plant repair, repairing of diesel engines, cotton gins, oil mills, farm implements and several other items, oil field, etc.. Tools will inventory around \$15,000. Can be financed with proper collateral. Owner wishes to retire from this field to care for other interests. Prices and list on tools on application.

Address all inquiries to Box 308
Greenville, Texas

CAMS

Our ROWBOTTOM cam cutting facilities are at your disposal for your cam requirements.

We solicit your inquiries.

BLOOMFIELD TOOL CORP.

36 FARRAND ST. BLOOMFIELD, N. J.

Falls
for
ECONOMY
with
PERFORMANCE

FALLS PRODUCTS, INC.
122 Genoa St. Genoa, Ill.

LYON - Raymond

SHEET FEEDING
and
DIE HANDLING
TABLES



LYON-Raymond Corp.
3718 Madison St.,

Greene, N. Y.

For
Fast, Accurate
Metal-Cutting
Use
KENNAMETAL CEMENTED
CARBIDE
TOOLS, BLANKS, and MILLING CUTTERS

KENNAMETAL Inc.
LATROBE, PA.

Quality Gray Iron and Alloy CASTINGS

Clean — Soft — Strong
Over 75 Years of Service

C. W. SHUMWAY & SONS

BATAVIA,

(CHICAGO SUBURB),

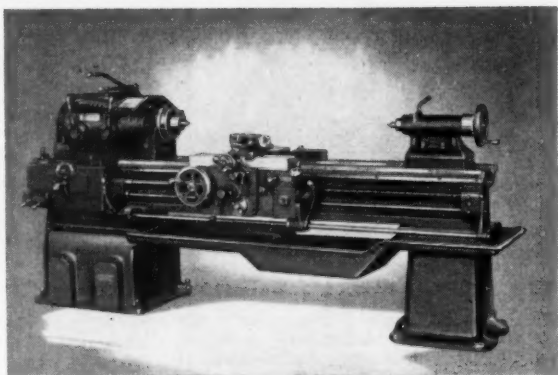
ILLINOIS

BOYÉ AND EMMES INTRODUCE IMPROVED 16" LATHE

The Boyé & Emmes Machine Tool Company, Cincinnati manufacturers of engine lathes, have recently brought out their improved 16" lathe. This recent development is built to operate at spindle speeds up to 1080 r.p.m. It is equipped with anti-friction bearing headstock, gear box, apron, and quadrant.

The new anti-friction bearing gear box furnishes 63 changes of thread, lead or feed, including $11\frac{1}{2}$ and 27 threads per inch. All gears in this box are heat-treated alloy steel with shaved teeth.

The manufacturer has also included many other features in the new 16" lathe, including a graduated tailstock spindle milled for drill tang, one-shot lubrication gear box and quadrant, anti-friction bearing lead-screw box, direct reading dials, chrome plated handles and handwheels, and sev-

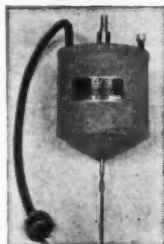


eral other improvements. For complete specifications and engineering data on the new unit, write:

The Boyé & Emmes Machine Tool Co.
125 Caldwell Drive, Dept. BB
Cincinnati 15, Ohio

Low-Priced

ELECTRICAL Broken Tool REMOVER



Only \$95

It's sensational — Every shop, every tool crib should have one. Removes broken tools and studs by electrical disintegration from a part being machined without damaging the part. Saves castings otherwise scrapped. Set it up on your drill press.

See Your Dealer or
Write Us Today.

ELOX

744 N. Rochester Road
Crawson, Michigan, U.S.A.
Phone, Detroit: Jordan 4-8173



FERRACUTE "P" PRESS

**Work Horse
of the Industry**

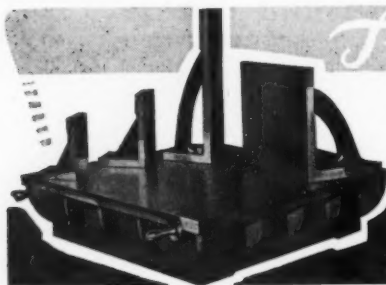
FERRACUTE PUNCHING PRESSES

keep busy . . . profitably . . . in every plant. For forming work and punching or shearing of heavy stock. Sturdy, rugged, amazing low maintenance and operating costs. From 20 to 150 tons, geared or flywheel.

Write for full specifications.



MACHINE CO.
BRIDGETON, N. J., U.S.A.



MILWAUKEE EQUIPMENT FOR TESTING AND CHECKING

Over twenty years of experience gives you "proved" performance — added assurance of quality production. Milwaukee Surface Plates, Angles, Parallels and Straight Edges are all made of the highest quality semi-steel and finished to exact dimensions.

WRITE TODAY FOR YOUR FREE CATALOG

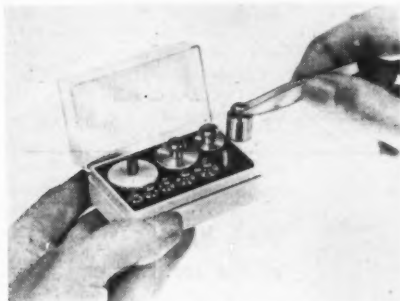
J. C. BUSCH COMPANY

Engineers and Machinists Since 1907

145 S. BARCLAY ST. • MILWAUKEE 4, WIS.

NEW OHAUS LABORATORY WEIGHTS

The Ohaus Scale Corporation announces its new laboratory weights, packaged complete with stainless steel forceps in a plastic case. The complete



set (50 gram to 10 mg.) has a wide industrial use. The weights are packed with every weight in its proper place in a molded Bakelite insert. By using this insert there is no distortion, since it

eliminates the sticking of the weights in each opening. The weights are well protected and clearly visible. They will not slip out of place when the box is inverted. The complete case is compact and attractive and will fit into the drawer of an analytical balance case.

Each weight in this Ohaus set is individually adjusted to within Bureau of Standards Class C tolerances, the accuracy required for test weights used by sealers of weights and measures.

The weights from 1 to 50 grams are made of highly polished lacquered brass. Fractional gram weights are satin finished aluminum, comparable to the finish of the most expensive weights. The denomination of each weight is clearly marked for easy identification. The stainless steel forceps supplied were designed for the easy handling of the smallest weights.

Additional information and catalog material may be obtained upon request to the manufacturer:

Ohaus Scale Corp., Dept BB
10-14 Hobson St.
Newark 8, N. J.

"STAR DUST"

LABORATORY GRADED PURE DIAMOND POWDERS

For GAUGES, TOOLS, DIES, etc., with tremendous TIME SAVING. These factors make STAR DUST indispensable in lapping and superfinishing on HARDSTEELS, TUNGSTEN CARBIDE, CHROME.

- Absolute control of particle sizes
- Complete absence of out-size particles
- STAR DUST sizes as fine as .0001"
- Complete range of grit sizes

There is a STAR DUST Field Serviceman in your territory.

ACE ABRASIVE LABORATORIES

139 DUANE STREET
NEW YORK 13, N. Y.

STAR DUST speeds up production enormously and produces finishes and superfinishes down to less than .00000004 of an inch.

Precision LAPPING
POWDERS for
PRECISION work





WADE ENVELOPES
protect
Shop Orders, Drawings,
Blueprints, etc.

Made in three styles, transparent, fibre, and metal backs. Non-inflammable acetate windows. Special style or size to order. Write for details.

WADE INSTRUMENT COMPANY

Phone: CEDAR 4728
1422 E. 109th St., Dept. H, Cleveland, Ohio

Produced by Nature.....**GRANITE**
Perfect by **SURFACE**
Herman Stone.....**PLATES**

Durable • Accurate • Economical
The inherent hardness and durability of granite, accurately finished to a guaranteed tolerance of .00005", provide the most efficient and economical surface plates for precision measurement operations. Sizes up to 8' x 16'.

★ Non-Magnetic ★ Can Not Warp

★ Corrosion-proof

Write for Free Trial Offer

THE HERMAN STONE COMPANY

324 Harries Bldg. • Dayton 2, Ohio

NEW! INDEXING FIXTURE



Here is a new G & H fixture which can be used horizontally or vertically . . . speeds precision machining. 2, 3, 4, 6, 8, 12 and 24 indexes set on

one index plate. Capacity 0 to 1/2". Write for full details.

G & H MFG. CO.

327 ELM STREET, FITCHBURG, MASS.

ATLANTIC GEARS precision-cut and in-

spected, on new, latest equipment. All sizes and types. Send samples or blueprints for quotation.

ATLANTIC GEAR WORKS, INC.

198 Lafayette St., N.Y. 12, N.Y.
Phone. CAnal 6-1441

Save Space and Lifting

Yohe Handy Rack floor stands take less space, hold more stock and require less lifting. Four arm rack - 51" high stacks, 10,000 lbs. Five arm rack 57" high holds 12,000 lbs. flat or round stock — at safe lifting heights. Use against wall or back-to-back in center of room.

Let us send details and prices

WM. S. YOHE SUPPLY CO.
503 Mahoning Rd., N.E. Canton, Ohio



**REICH 3-WAY
PRECISION TEST INDICATOR**

Lifetime conical bearings, stainless and non-magnetic. Sturdy construction. Needs no service or adjustment. .014" reading.

Price \$6.50

Write for folder

J. R. Reich Manufacturing Co.
45 E. Stroop Rd., Dayton 9, Ohio

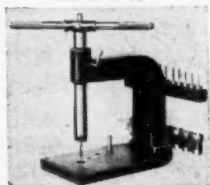
Lassy TAPPERS

Universal
**TAP AND DIE
GUIDE FIXTURE**

3 Sizes
Free Folder.
Shipped on 5 day
approval. Imme-
diate delivery.

LASSY TOOL CO.
Plainville, Conn.

\$49.75 with 12 tap
adapters
No. 5 to 5/8"



BURR KEYSEATERS

Mill keyways in the run or on the ends of shafting already erected—save money on alteration, erection, and repair work.



Made in 4 sizes, for hand or motor operation.

Write for Bulletins and prices.

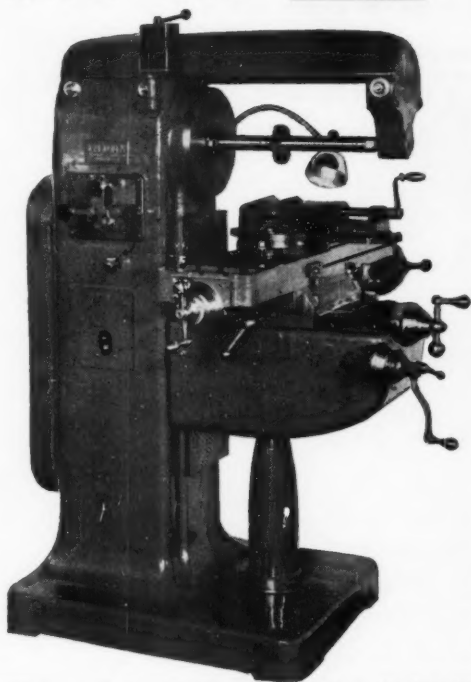
JOHN T. BURR & SON
429 Kent Ave.,

Brooklyn, N. Y.

Mechanics Through The Ages



FULL No. 1 CAPACITY with the NEW INDEX



Plain MILLING MACHINE

Large size table — working surface 32" x 9".
Larger table optional.

Feed instantly reversed
without stopping motor or
spindle.

Coolant system stops and
starts with spindle.

Fully heat-treated, hardened and ground alloy
spindle mounted in precision ball bearings.

Ground thread ball bearing
lead screws . . .

and many other operating
features.

Please ask for literature on Index Model 60

The new Index Plain Milling Machine readily meets the needs of the average tool room. However, its built-in accuracy and rigidity plus operating ease also make this machine excellent for the requirements of production shops. Note the compact design, convenient location of each control and the enclosure of all working parts. There are more reasons why Index can increase your output and cut costs.

INDEX MACHINE Co.

540 N. MECHANIC STREET

JACKSON, MICHIGAN

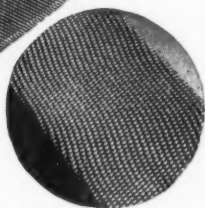
WHATEVER YOU NEED, YOU'LL FIND IT HERE

Compiled for quick reference and for your convenience, this handy index of products shows the pages on which you will find the items advertised in this issue. When writing to advertisers it will be appreciated if you will mention **MACHINE and TOOL BLUE BOOK**.

In the event you are unable to find the product or equipment you need, please write us and we'll be glad to supply the information. No obligation. Hitchcock Publishing Company, 222 East Willow Ave., Wheaton, Illinois.

- Abrasive Belt Machines, 55, 94, 136
- Abrasive Cloth, Paper, Disc, Belts, Wheels, Stones, etc., 34, 35, 59, 102, 103, 136, 144, 179, 248
- Air Control Equipment, 39, 246
- Air Operated Equipment, 23, 43, 47, 55, 65, 127, 155, 177, 179, 209
- Alloys, 70, 230, 246
- Angles, 187, 221, 248
- Anti-Friction Compound, 164
- Backrests, Roller, 147
- Backstands, Bench and Floor Type, 43
- Balancing Machines, 36, 163
- Balancing Tools, 163
- Balancing Ways, 232
- Bar Machines, Automatic, 120, 121
- Belts, 30, 144
- Bench Centers, 217
- Bending Equipment, 7, 137, 212
- Bins, 126, 173
- Bits, 108
- Blowers, 100
- Books, 3
- Boring Bars and Tools, 13, 109, 114, 165
- Boring, Drilling and Milling Attachments, 149
- Boring, Drilling and Milling Machines, 13, 93, 157
- Boring Machines, 21, 93
- Box Tools, 165
- Brakes, Press and Bending, 7, 11, 51, 170
- Broaching Attachments, 12
- Broaching Machines, 8, 9, 188
- Burring Machines, 44, 45
- Bushing, Ball, 130
- Bushings, Drill Jig, 192, 220, 241, 263
- Calipers, 182
- Cams, 152, 214, 246
- Carbide Tools, 109, 122, 145, 147, 215, 224, 232, 246, 253
- Carbides, 58
- Castings, 187, 246
- Centers, Lathe, 222
- Centers, Live, 32, 171, 198, 218, 222
- Centering Machines, 125, 146
- Chains and Sprockets, 236
- Chucking and Indexing Fixtures, 242, 249
- Chucking Machines, 87, 131
- Chucks, 18, 19, 54, 146, 246
- Chucks, Air Operated, 65, 127, 177
- Chucks, Collet, 18, 19, 54, 165, 177, 199, 246
- Chucks, Drill, 182, 234
- Chucks, Magnetic, 54, 101
- Clamps, 64, 154, 158, 173, 203, 214, 263
- Clamps, Toggle, 154, 158
- Clutches, 40, 190, 208
- Collets, 18, 19, 29, 131, 189, 199, 221
- Comparators, Optical, 182
- Compounds, Die Casting, Forging, 164
- Copper, 230
- Counterbores, 166
- Counters, 126
- Countersinks, 77, 138, 150
- Counting Devices, 159
- Couplings, 208
- Curtains, Way, 180
- Cut-Off Machines, 37, 136, 137, 139, 264
- Cutter Sharpening Machines, 8, 9
- Cutters, Rod, 7
- Cutting Fluid and Oils, 8, 9, 15
- Cutting Tools, 46, 122, 138, 143, 145, 155, 215
- Cylinders, Hydraulic and Pneumatic, 43, 47, 65, 127, 155, 179
- Deburring Machines and Tools, 138, 222
- Demagnetizers, 32, 54, 101
- Dial Indicators, 75, 165
- Diamond Powder, 128, 213, 248
- Diamond Wheels, 148
- Diamonds, 213
- Die Casting Compounds, 164
- Die Casting Machines, 131
- Die Castings, 60
- Die Checkers, 221
- Die Filers, 188
- Die Holders, 147
- Die Making Machines, 31
- Die Polishing Machines, 152
- Die Sets, 33, 129, 195, 259
- Die Springs, 259
- Dies, 1, 104, 129, 184, 186, 261
- Dies, Roller, 214
- Dies, Split, 92, 166
- Dividing Heads, 54, 157, 242
- Dowel Pins, 259
- Drawer Units, 173
- Dressing Fixtures, Grinding Wheels, 83, 113, 188, 213, 221
- Drill Heads, 92, 160, 165, 199
- Drill Heads, Multiple Spindle, 92, 163, 165, 169, 199, 234
- Drilling Machines, Bench, 10, 193
- Drilling Machines, Flexible Shaft, 41, 169
- Drilling Machines, Multiple Spindle, 93
- Drilling Machines, Radial, 68, Inside Back Cover
- Drilling Machines, Vertical, 10, 68, 95, 169, 193
- Drilling and Tapping Machines, 152, 234
- Drills, Electric, 26, 28, 55

For better work in less time
 . . . at less cost . . . **USE**
DISSTON
BITE-RITE FILES



Staggered teeth eliminate file tracks
 . . . make finished surfaces smoother.
 Rounded gullets form curls instead
 of chips . . . thus to a great extent
 are self-cleaning.

files that are DIFFERENT

Different in design, in performance, in results. And those differences combine to improve workmanship at a saving of time and money. Here are the reasons:

Instead of being cut in straight rows, the teeth of Disston Bite-Rite Files are staggered. This enables you to cut straighter . . . when teeth are straight rowed, file tends to follow direction of rows. You can do smoother work . . . absence of tracking eliminates much refinishing. You can speed up your filing, for teeth are sharp-biting and hold their edges. And you can count on longer file life . . . lower file costs.

There are Disston files for all needs, including a complete line of Disston Swiss Pattern Files . . . precision made for precision work.

For other metal-cutting tools of extra quality, ask for DISSTON METAL CUTTING BAND SAWS . . . HACK SAW BLADES . . . CIRCULAR SAWS . . . CARBOLLOY FITTED CIRCULAR SAWS . . .

WHEN YOU BUY A
 DISSTON PRODUCT YOU



HENRY DISSTON & SONS, INC., 949 Tacony, Philadelphia 35, Pa., U. S. A.
 In Canada, write 2-20 Fraser Ave. Toronto 3, Ont.

When Writing Advertisers Please Mention MACHINE and TOOL BLUE BOOK

253

- Drills, High Speed, 257
- Drives, Gearshift, 38
- Duplicating Machines, 184
- Dust Control Equipment, Fumes, 24, 32
- 161, 187
- Dyes, Marking, 194, 204, 239
- Elevators, Portable, 82, 95
- Embossing Machines, 37
- Engravers, 223
- Envelopes, 249
- Etchers, 32
- Extension Lights, 186
- Extractors, Tap, 239, 247
- Face Plates, 165
- Facing Heads, 238
- Facing Tools, 13, 109, 224
- Feeding Tables, Sheet, 246
- Files, 77, 91, 253
- Files, Rotary, 183, 215
- Filing Machines, 44, 45, 150
- Filters, 23
- Finishing Machines, 44, 45
- Fixture Clamps, 203
- Flame Hardening Machines, 8, 9
- Flexible Shaft Equipment, 41, 111, 119
- Flexible Shaft Machines, 41, 111, 119, 169
- Floor Resurfacing, 34, 35, 84
- Furnaces, Heat Treating, 215, 237
- Gage Blocks, 182
- Gages, 66, 166, 220
- Gages, Height, 176
- Gages, Plug, 66
- Gear Checkers, 182
- Gear Cutting Machines, 85, 146
- Gears, 85, 152, 242, 249
- Gears, Rawhide, 30
- Grills, 142
- Grinders, Abrasive Band, 94
- Grinders, Air, Portable, 55, 209
- Grinders, Bench, 26, 133, 141, 264
- Grinders, Carbide, 141
- Grinders, Contour, 2, 21, 27
- Grinders, Disc, 34, 35
- Grinders, Drill, 31, 115, 205
- Grinders, External, 2
- Grinders, Face Mill, 31, 115
- Grinders, Flexible Shaft, 41, 111, 119
- Grinders, Flute, 143, 235
- Grinders, Lathe, 28
- Grinders, Pedestal, 264
- Grinders, Portable Electric, 119, 183, 264
- Grinders, Profile, 2, 8, 9, 188
- Grinders, Surface, 115, 123, 133, 179
- Grinders, Tap, 115, 123, 235
- Grinders, Thread, 213
- Grinders, Tool, 123, 133, 235
- Grinders, Tool, Template, 31
- Grinders, Tool and Cutter, 8, 9, 31, 115, 119, 133, 141, 143, 205, 235
- Grinders, Tool Post, 119, 264
- Grinding, Boring, Milling & Drilling Attachment, 113, 118, 143, 149, 167, 219
- Grinding Wheel Forming Attachment, 83, 113
- Grinding Wheel Spindle Units, 34, 35
- Grinding Wheels, 59, 102, 103
- Guides, Saw, 206
- Hammers, Electric, 168, 193, 204
- Hammers, Rawhide, 30
- Handles, Machine, 187, 214
- Hardening Machines, Flame, 8, 9
- Heads, Tap, 140, 167
- Hinges, 222
- Holder's, Back Rest, 147
- Holders, Tool, 4, 50, 147, 225
- Hydraulic Equipment, 47, 52, 53, 127, 155
- Hydraulic Packing, 30
- Index Fixtures, 221
- Indexers, 242, 249
- Inspection and Measuring Devices, 22, 66, 75, 181, 182, 184, 187, 217, 248, 249
- Inspection Device Repairs, 176
- Jig Bore, 68, 156
- Jig Plates, 165
- Joints, Universal, 86
- Keyseaters, 177, 188, 249
- Keyway Cutting Equipment, 166
- Knobs, 187
- Knurls and Equipment, 222
- Labeling Machines, 34, 35
- Lapping Equipment & Compounds, 34, 35, 248
- Lathe Attachments, 4, 50, 54, 189, 199
- Lathe Dogs, 4
- Lathe, Automatic, 36, 210
- Lathe, Gap, 107, 161, 210
- Lathe, Precision and Toolroom, 20, 27, 107, 189, 200, 210, Inside Back Cover, Back Cover
- Lathe, Production, Inside Back Cover, 161, 200, 210, Back Cover
- Lathe, Sensitive, 245
- Lathe, Speed, 171, 264, Back Cover
- Lathe, Turret, 3, 36
- Layout Materials, 194, 204, 239
- Lighting, 186, 240
- Locating Jigs, 263
- Lubricants, 6, 164, 193, 228
- Lubricators, 23
- Mandrels, Expanding, 94
- Marking Machines, 162, 168, 184
- Measuring Machines, 22
- Micrometers, 75, 181, 182, 244
- Micrometers, 182
- Micromills, 108, 189
- Milling Cutters, 109, 122, 138, 145, 215, 224, 246
- Milling Machine Attachments, 4, 13, 57, 134, 149, 152, 157, 165, 199, 219, 242
- Milling Machine, Vertical, 157
- Milling Machines, 8, 9, 116, 134, 149, 157, 200, 251
- Milling Machines, Automatic, 157
- Milling Machines, Bench, 186
- Milling Machines, Hand, 219, 223
- Milling Machines, Horizontal, 157, 251
- Mills End, 108, 145
- Mills, Hollow, 224
- Motor Drives, 38
- Motors, 38
- Mounted Wheels, 102, 103
- Nibbling Machines, 55, 136
- Notching Machines, 7, 185
- Numbering Heads, 229
- Nut Setters, 264
- Oil Circulating Heads, 163
- Oil Groovers, 181
- Optical Inspection Devices, 22, 182, 184, 187, 199, 221, 244, 249
- Parallels, 187, 248
- Partitions, 90
- Perforated Metals, 142
- Perforating Units, 1
- Pillow Blocks, 189
- Plastics, 111
- Plates, Angle, 187
- Plates, Surface, 187, 195, 248
- Plates, Surface, Granite, 249

**PUNCHED, WORK-HARDENED HOLES
GALLED ORDINARY TAPS**

HERE'S HOW...

**HY-PRO licked the problem
and increased production 10-fold!**

PARTS: Anchor pieces of 1020 steel with *punched* holes.

PROBLEM: Tapping with ordinary taps had to be done at very low speeds to prevent welding tap to piece. Changing cutting oil made no difference. Taps were continually galling in the soft, stringy material.

Then they called the HY-PRO Sales Engineer.

HY-PRO SOLUTION: He recommended a Hy-Pro $\frac{1}{8}$ -24 3 Flute Spiral Point Tap with the exclusive Hy-Pro Ferrox Surface Finish. Running at a speed of 50'/min. with a water-soluble lubricant, production increased tenfold. The Hy-Pro Taps never galled in the soft, stringy steel and stayed sharp longer in spite of the work-hardened, punched holes.

Above is a typical example of how the Hy-Pro Sales Engineer can help increase threaded-hole production. His expert engineering counsel backed by the most up-to-date tap production methods combine to solve tapping problems rapidly and profitably.

Rx

Let Hy-Pro solve your tapping problem —
call a Hy-Pro Sales Engineer today.

Order from your Distributor

REG. U.S. PAT. OFF.
**HY-PRO
TAPS**

HY-PRO TOOL CO.

NEW BEDFORD, MASSACHUSETTS

A SUBSIDIARY OF CONTINENTAL SCREW COMPANY



- Pneumatic Tools, 47, 209
 Polishing Machines, 41, 44, 45, 183
 Portable Electric Tools, 26, 28, 119, 183, 264
 Press Attachments, 185
 Press Brakes, 11, 51, 170
 Presses, Arbor, 194
 Presses, Drill, 119, 169, 194
 Presses, Hydraulic, 52, 53, 61, 169, 232
 Presses, Punch, 12, 151, 169, 194, 211, 247, 259, 261
 Presses, Transfer, 203
 Profiling Machines, 116
 Pumps, Coolant and Lubricant, 48, 127, 233
 Pumps, Hydraulic, 139
 Punches, 7, 104, 186, 242
 Pushers, 29
 Pyrometers, 132
 Quills, 119
 Racks, 126, 208, 249
 Radius Tools, 113, 188, 221
 Rawhide Products, 30
 Reamers, 109, 257
 Rectifiers, 54
 Reel Stands, 56, 150, 186, 199
 Riveting Attachments, 12
 Riveting Machines, 16, 188, 204
 Roll Feeds, 56, 150, 207
 Roll Forming Machines, 37, 214
 Roll Marking Machines, 184
 Routers, 264
 Sanders, 41, 55, 183
 Saw Blades, Band, Inside Front Cover, 75, 195, 253
 Saw Blades, Hack, 25, 75, 195, 253
 Saw Guides, Band, 206
 Sawing Machines, 88
 Sawing Machines, Band, Inside Front Cover, 75, 150, 174, 196
 Sawing Machines, Hack, Inside Front Cover, 25, 54, 139, 150, 151
 Saws, Circular, 46, 253
 Scrap Cutters, 150
 Scraper, Blades, 232
 Screens, Perforated, 142
 Screw Drivers, Power, 55, 216, 226, 264
 Screw Machines, Automatic, 3, 21, 87, 120, 121, 125, 131, 188
 Screw Machines, Hand, 10
 Set-Up Equipment, 178
 Screws, Cap, Set, Socket & Machine, 150, 194, 214
 Services: Milling, Grinding, Lapping, Rebuilding, Repairing, Business, etc., 60, 150, 152, 176, 198, 220, 242, 246
 Shapers, 11, 20, 151, 200
 Shapers, Crank, 20
 Shavers, High Speed, 188
 Shear, Electric, Hand, 26, 55
 Shearing Machines, 11, 17, 62, 63, 137, 167, 194
 Shears, Throatless, 185, 243
 Sheet Metal Equipment, 167
 Shelving, 126
 Shim Stock, 218
 Sine Plates, 101
 Slitting Machinery, 37
 Slotting Attachments, 57
 Soldering Tools, 205
 Special Machinery, 36
 Special Tools, 118, 186
 Speed Reducers, 81, 193
 Speedometers, 159
 Spindles, 14
 Spring Winders, 240
 Spotters, 232
 Sprockets, 236
 Stampings, 132
 Stamps, 184, 229
 Steel and Steel Stock, 70, 75, 227
 Stercils, 162
 Stock Reels, 56, 186, 199
 Straight Edges, 248
 Straighteners, 150
 Strapping Steel, 26
 Structural, 70
 Stud Setters, 49, 124
 Studs, 214
 Superfinishers, 36
 Swaging Machines, 152, 168, 235
 Switches, Demagnetizing, 54
 Tables, Elevating, 95, 171, 246
 Tables, Rotary and Index, 12, 57, 94, 116
 Tanks, Dewatering, 161
 Tap Extractors, 239, 247
 Tap Guide Fixtures, 249
 Taper Attachments, 165
 Tapes, Steel, 75
 Tapping Attachments, 42, 92, 124, 140, 165, 234
 Tapping Machines, 3, 42, 95, 140, 249, 264
 Taps, 166, 255
 Thread Rolling Machine, 152
 Threading Attachments, 92, 118, 166
 Threading Machines, 3
 Tool Cribs, 90
 Tool Designing, 193
 Tool Posts, 147
 Tool Removers, 239, 247
 Tracer Controlled Equipment, 116
 Transfer Machines, 88
 Transformers, 189
 Traps, Air, 231
 Trucks, Lift, 82
 Tube Mill Machinery, 37
 Tubing Cutters, 136, 138, 185
 Turbines, Steam, 146
 Turning Machines, 21, 27, 88, 214
 Turrets, Bed, 165
 Turrets, Tailstock, 165
 Twist Drills, 109, 145
 Vacuum Cleaners, Industrial, 100
 Valves, 23, 39, 48, 127, 139, 150, 177, 246
 Verniers, 182
 Vises, Bench and Machine, 54, 64, 152, 171, 178, 208, 221, 222, 238, 242, 244
 Wey Curtains, 180
 Welding Equipment and Supplies, 37, 180, 189
 Winders, Spring, 240
 Wire Mesh, 90, 142

This products index is a free service to advertisers to assist our readers in quickly finding the products in which they are interested. Listed are only the products mentioned in the advertisements in this issue. It is not necessarily a complete index of all the various products manufactured by the advertisers. While every effort has been made to guard against omissions and inaccuracies, the compilers cannot be responsible for errors, which are sometimes beyond control.

NEW

-

SURPLUS

SETS OF HIGH SPEED DRILLS

No. 1—60 HS Drills, 60 Drills W/Stand, Set \$10.00

1/16"-1/2" HS Drills, 29 Drills W/Stand, Set \$13.50

A-Z HS Drills, 26 Drills W/Stand, Set \$12.50

1/2"—1" HS Drills by 64ths, Straight or Taper Shank,
33 Drills Set \$75.00

REAMER SETS

Sets A-H Critchley Type Expansion Reamers 15/32"
1-1/16", 8 Reamers in Wd. Bx. \$16.50

Sets I-L Critchley Type Expansion Reamers 1-1/16"
1-25/32", 4 Reamers in Wd. Bx. \$17.50

Sets 1/4"—1 1/4" by 32nds Hand Reamers, 33 Reamers
in Wooden Box, \$30.00

Sets 1/4"—1" by 16ths Hand Expansion Reamers
13 Reamers in Wooden Box, \$32.50

Sets 1/8"—1" by 16ths H.S. Machine Reamers 1/8"—
9/16" Straight Shank, 3/8"—1" No. 2 MTS 21
Reamers in Wooden Box, \$35.00

Sets No. 0—10 Pin Reamers, 11 Reamers in Bx. \$7.50

VICTOR MACHINERY EXCHANGE, Inc.

251 Centre Street

Phone: CAnel 6-5575

New York, N. Y.

Index to Advertisers

A

Abart Gear & Machine Company	193
Abrasive Machine Tool Company	179
Abrasive Products Inc.	144
Accurate Bushing Co.	263
Ace Abrasive Laboratories	248
Ace Drill Bushing Company	192
Acme Industrial Company	241
Acme Tool Company	183
Acme Wire and Iron Works	90
Adamas Carbide Corp.	58
Aget-Detroit Company	187
Air Way Pump & Equipment Company	246
Allied Products Corporation	104
Almond Manufacturing Company, T. R.	182
American Chain & Cable Company	136
American Tool Works Company	Inside Back Cover
Anderson Brothers Manufacturing Company	232
Armstrong-Blum Mfg. Company	Inside Front Cover
Armstrong Brothers Tool Company	4
Associated Traders Inc.	195
Atlanta Tool Co. (Div. Precision Prod. Co.)	189
Atlantic Gear Works Inc.	249
Auto Moulding & Manufacturing Company	222

B

Balas Collet Company	29
Baldor Electric Company	141
Bartelt Engineering Company	181
Baumbach Manufacturing Company, E. A.	195
Bay State Abrasive Products Company	59
Bear Manufacturing Company	163
Bemis & Call Company	134
Beverly Shear Manufacturing Company	243
Black and Webster Inc.	168
Bloomfield Tool Corp.	246
Bond Company, Charles	81
Breuer Electric Manufacturing Company	100
Bridgeport Machines, Inc.	149
Brown & Sharpe Manufacturing Company	44-45
Brown Engineering Company	208
Buckeye Tools Corp.	55
Buffalo Forge Company	137
Bullard Company	93
Burke Machine Tool Company	186
Burr & Son, J. T.	219
Busch Company, J. C.	248

C

Carter Products Company	203
Centerscope Products	199
Cerro-de-Pasco Copper Corp.	230
Chicago Die Casting Manufacturing Company	60
Chicago Manufacturing & Distributing Co.	6

Chicago Rawhide Manufacturing Company	30
Chicago Rivet and Machine Company	16
Chicago Wheel & Manufacturing Company	102-103
Cincinnati Bickford Tool Company	68
Cincinnati Electrical Tool Company	264
Cincinnati Milling Machine Co.	8-9
Cincinnati Shaper Company	11
Cincinnati Ventilating Company	173
Circular Tool Company, Inc.	46
Clemson Brothers Inc.	195
Cleveland Automatic Machine Company	131
Clipper Diamond Tool Company	213
Columbus Die, Tool and Machine Company	193
Commander Manufacturing Company	165
Cone Automatic Machine Company	120-121
Conrad Machine Company	242
Conway Clutch Company	40
Cook and Chick Company	216
Covel Manufacturing Company	123
Cullman Wheel Company	236
Curtis Universal Joint Company	86
Cushman Chuck Company	65

D

Danly Machine Specialties, Inc.	129-130
Dayton Rogers Manufacturing Company	132
Dearborn Company, J. W.	242
Denison Engineering Company	12
Derbyshire, F. W.	189
Detroit Power Screwdriver Company	226
Detroit Reamer & Tool Company	143
Detroit Stamping Company	158
DI Machine Corp.	261
Dixton & Sons, Inc., Henry	253
Dixon & Ryan	176
Drels & Krump Manufacturing Company	51
Ducon Company	161
Dumore Company	119
Dykem Company	194

E

Economy Engineering Company	82
Economy Machine Products Company	194
Economy Tool & Machine Company	220
Eisler Engineering Company, Inc.	189
Electro-Mechano Company	169
Elgin Tool Works	10
Elox Corp.	247
Engle Equipment Company	128
Etico Tool Company	234

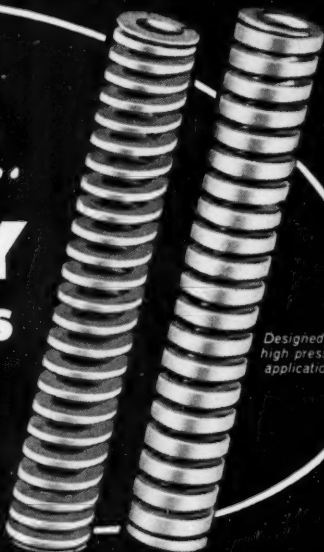
F

Fakes and Company, J. B.	222
Falls Products Inc.	246

2

COMPLETE LINES HELP SOLVE DIE DESIGN PROBLEMS

Save with...

**DANLY
DIE SPRINGS**Designed for
medium pressure applicationsDesigned for
high pressure
applications

Why compromise when you can specify die springs that meet your individual requirements more exactly? Danly's two complete lines double your range of selection for any given application.

Any standard size is available in either medium or heavy duty types.

All Danly Die Springs are precision coiled from the finest fatigue resistant steel and ground square on both ends to assure full end bearing.

Start selecting your die springs
to fit the job . . . specify
DANLY DIE SPRINGS!

Write today for our special size and price
folder giving detailed information on
Danly Die Springs and Danly Dowel Pins.

**DANLY DOWEL PINS**

Danly Precision Dowel Pins are hardened 58-60 Rockwell C, to prevent up-setting in driving and are ground to tolerances of $\pm .0001$ throughout. A complete range of .001 oversize pins is available for repair or renewal work.

**DANLY MACHINE SPECIALTIES, INC.**

2100 SOUTH 52ND AVENUE, CHICAGO 50, ILLINOIS

PRECISION DIE SETS . . . MECHANICAL PRESSES

25 YEARS OF DEPENDABLE SERVICE TO THE STAMPING INDUSTRY

Famco Machine Company	194
Fellows Gear Shaper Company	85
Ferracute Machine Company	247
Fiske Brothers Refining Company	164
Flexrock Company	84
Ford Manufacturing Company, M. A.	215
Frick-Gallagher Manufacturing Company	120
Fulflo Specialties Company	48

G

G. & H. Manufacturing Company	249
Gairing Tool Company	224
Galland-Henning Manufacturing Company	47
Gallmeyer & Livingston Company	115
Gardner Machine Company	2
Giddings & Lewis Machine Tool Company	114
Gisholt Machine Company	36
Glenzer Company, J. C.	50
Gorton Machine Company, George	116
Graham Manufacturing Company	244
Grant Manufacturing & Machine Company	204
Gratiot Tool Supply Company	173
Greaves Machine Tool Company	242
Grob Brothers	150
Grobet File Company of America	77

H

Hall Manufacturing Company	199
Hamilton Tool Company	95
Hammond Machinery Builders	43
Hannifin Corporation	39
Hardinge Brothers, Incorporated	Back Cover
Harrington & King Perforating Company	142
Hartford Special Machinery Company	152
Haskins Company, R. G.	41
Hendey Machine Company	20
Herman Stone Company	249
High Speed Hammer Inc.	193
Hoggson & Pettis Manufacturing Company	220
Humm Safety Equipment, John	186
Hunter-Douglas Corporation	167
Hy-Pro Tool Company	255

I

Ideal Industries, Inc.	32
Index Machine Company	251
Industrial Products Suppliers	216

J

Jacobs Manufacturing Company	18-19
Johnson Machine & Press Corp.	169
Johnson Manufacturing Company	174

K

Kennametal, Incorporated	246
Keymatic Machine Company	177

L

L-W Chuck Company	54
Lal'Peer Manufacturing Company	64
Lassy Tool Company	249
LeBlond Machine Tool Company, R. K.	210
Leiman Brothers Inc.	233
Levin & Son, Louis	245
Lewthwaite Machine Company, T. H.	186
Libert Machine Company	167
Lima Electric Motor Company	38
Lindner Machine & Tool Company	160
Linley Brothers Inc.	156
Littell Machine Company, F. J.	150
Logansport Machine Company	127
Lovejoy Tool Company	122
Luma Electric Equipment Company	205
Lyon-Raymond Corporation	246

M

McDonough Manufacturing Company	205
Machine Products Corp.	187
Madison-Kipp Corporation	209
Maplewood Machinery Company	214
Marshall Steel Company	227
Marshalltown Manufacturing Company	185
Martin Machine Works, J. E.	242
Marvin Machine Products, Inc.	57
Master Tool Company	178
Matco Tool Company	221
Merz Engineering Company	22
Meyers Company, W. F.	113
Michigan Chrome & Chemical Company	204
Michigan Drill Head Company	199
Mico Instrument Company	223
Midwest Tool & Engineering Company	171
Millers Falls Company	25
Milwaukee Chaplet & Manufacturing Company	188
Modern Tool Works	49
Moly-Lube Products	193
Monarch Machine Tool Company	27
Montgomery & Company, Inc.	240
Morton Machine Works	214
Motch & Merryweather Machinery Co., The	88
Motor Tool Manufacturing Company	218
Mummet Dixon Company	238

N

National Acme Company	87
Nebel Machine Tool Company	161
Nelco Tool Company	145
New Britain Machine Company (New Britain Gridley Division)	21
New Method Steel Stamps, Incorporated	184
Niagara Machine & Tool Works	17-62-63
Nichols-Morris Corporation	157

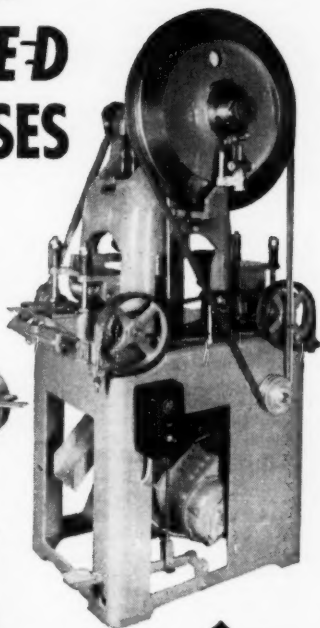
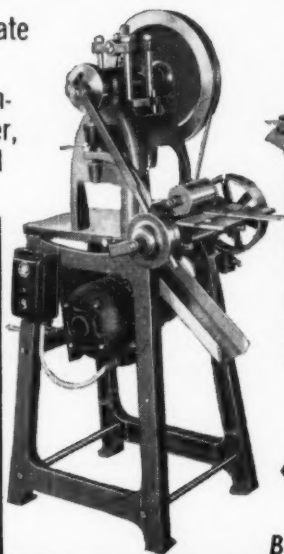
**Speed and Efficiency
Equal - MORE PRODUCTION !
- MORE PROFIT !!
- LOW COST !!!**

**WITH PRECISION BUILT
DIEBEL-HI-SPEED
AUTOMATIC PRESSES**

- Economical to Operate
- Low Initial Cost
- For Ferrous and Non-Ferrous Metals, Fiber, Plastics, Rubber and Paper.

**COMPLETE
INFORMATION**

Mailed on Request
Production Facts,
Photographs of
Compound and
Progressive Dies,
Capacities, Ranges,
Sizes, Dimensions,
Full Specifications.



← 5 TON PRESS
180-550 STROKES
PER MINUTE

↑ 12 TON PRESS
65-300 STROKES
PER MINUTE

Built-in Automatic Feed

DI MACHINE CORP.

2712 IRVING PARK ROAD, CHICAGO 18, ILL.

Nicholson & Company, W. H.	231
Nicholson File Company	91
Nielson, Incorporated	171
Nobur Manufacturing Company	222
Norgren Company, C. A.	23
Norton Company	34-35

O

Oliver Instrument Company	31
O'Neill-Irwin Manufacturing Company	7
Ottomiller Company, Wm. H.	150

P

Palmer Industries	242
Pannier Corp.	162
Perkins Machine Company	203
Plunket Machine Company, J. E.	238
Pneumatics, Incorporated	179
Pope Machinery Corporation	14
Pratt and Whitney Division (Niles-Bement-Pond)	83
Proeumer Safety Chuck Company	110
Producto Machine Company	33
Prutton Machine & Tool Company, D. H.	42
Pyrometer Instrument Company	132

R

R & L Tools	147
Racine Tool & Machine Co.	139
Reading Machine Company	188
Redmer Air Device Corp.	177
Reich Manufacturing Company, J. R.	249
Rice Pump & Machine Company	188
Robbins Company, Omer E.	101
Rockford Clutch Division	190
Rodgers Hydraulic Inc.	52, 53
Roll Feeds Corporation	207
Rouse & Company, H. B.	219
Ruleta Company	199
Ryerson and Son, Inc., Joseph T.	70

S

Sales Service Machine Company	151
Sanford Manufacturing Company	133
Save Lamp Supply Company	186
Schauer Machine Company	171
Scherr Company, Inc., George	182
Scientific Lubricants Company	228
Scully-Jones & Company	118
Seneca Falls Machine Company	125
Service Machine Company	211
Severance Tool Industries, Inc.	138-150
Sheldon Machine Company	200
Shumway & Sons, C. W.	216
Simonski, Gilbert S.	215
Smit & Sons, J. K.	148
Sperman Metal Specialties Inc.	188
Standard Gage Company, Inc.	66
Stanley Works	26
Starrett Company, L. S., The	75

Sun Oil Company	15
Sundstrand Machine Tool Company	217
Super Tool Company	109
Swedish Gage Company of America	184

T

Tanms Industries, Inc.	239
Tannewitz Works	196
Thermo Electric Manufacturing Company	237
Thomson Industries, Inc.	130
Threadwell Tap & Die Company	166
Thrifmaster Products Corp.	92
Tietzmann Tool Company	221
Tomkins-Johnson Company	155
Tool Supply Company	180
Torit Manufacturing Company	24
Townsend Manufacturing Company, H. P.	188
Tree Tool & Die Works	13
Treichler-Precision Grinding, L. F.	198
Trindl Products Ltd.	180
Troyke Manufacturing Company	21-242
Tubular Micrometer Co.	244

U

U. S. Drill Head Company	163
U. S. Electrical Tool Company	28
Universal Engineering Company	225

V

Vanderwall Company, Ernest H.	222
Veeder-Root, Inc.	159
Victor Machinery Exchange	257
Vimeo Manufacturing Company	210
Vogel Tool and Die Corporation	185

W

Wade Instrument Company	249
Wade Tool Company	197
Wahlund Mechanical Laboratories, Paul	165
Wallace Supplies Manufacturing Company	212
Walls Sales Corporation	94
Walton Company	239
Wardwell Manufacturing Company	235
Warner & Swasey Company	3
West Point Manufacturing Company	203
Whistler & Sons, S. B.	1
White Dental Manufacturing Company, S.S.	111
Whitney Metal Tool Company	170
Whiton Machine Company	146
Wileco Machine Company	181
Wickman Manufacturing Company	124
Wilson, K. R.	51
Witte Manufacturing Company	56
Wolverine Tool Company	154
Woodson Tool Company	108

Y

Yoder Company	37
Yohe Supply Company, Wm. S.	249
Yost Manufacturing Company	171
Young Arbor Company	94

*Dependable
Available*

ABC DRILL JIG BUSHINGS

HEADLESS PRESS FIT • SLIP RENEWABLE
FIXED RENEWABLE • HEAD PRESS FIT

Also HEADLESS LINERS, LOCATING JIGS, LOCKSCREWS, CLAMPS



A·S·A
STANDARD

**UNEXCELLED FOR
ACCURACY AND
CONCENTRICITY**



REPRESENTATIVES:

BOSTON, MASS.
M. A. Siebert Co.
Garrison 7-0104

BUFFALO, N. Y.
W. S. Gallagher Co.
Garfield 5500

CLEVELAND, OHIO*
Die Supply Company
UT 1-0550

DALLAS, TEXAS
The Stanco Co.
Riverside 5138

DAVENPORT, IOWA
Davenport Engineering Corp.
Davenport 2-1791

DAYTON, OHIO*
Geo. D. Loughter Co.
Kenmore 4191

DENVER, COLO.
Iver J. Esbenson Co.
Main 3831

DETROIT, MICH.
Diemaker Supplies Co.
Trinity 1-2865

HOUSTON, TEXAS
Chickering Tool & Equip't. Co.
W. 6-8584

INDIANAPOLIS, IND.*
The Standard Die Supply, Inc.
Riley 6319

NEW YORK, N. Y.
Carl Eberhard
Wisconsin 7-9193

MILWAUKEE, WIS.
The Stone Company, Inc.
Broadway 2452

MINNEAPOLIS, MINN.
Chas. W. Stone Co.
Geneva 8631

PHILADELPHIA, PA.
Albert R. Dorn
DElaware 6-3553

RHINEBECK, N. Y.
Frank A. Hart
Rhinebeck 437

ROCHESTER, N. Y.
Fink Tool Co.
Munroe 5679

SOUTH BEND, IND.
Formrite Tool Co.
South Bend 2-3396

STRATFORD, CONN.*
Ellsworth Steel & Supply Co.
Bridgport 7-3317

*Stock of popular sizes maintained at these locations. Complete factory stock and warehouse at Garwood, N. J.

WRITE FOR CATALOG, PRICE LIST AND OTHER
INFORMATION NEEDED BY THE TOOL ENGINEER

ACCURATE BUSHING COMPANY

437 North Ave., GARWOOD, N. J. • Westfield 2-2415



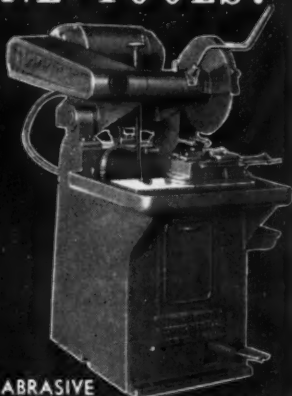
The Cincinnati....

TRADE MARK

TRADITIONALLY FINE TOOLS!



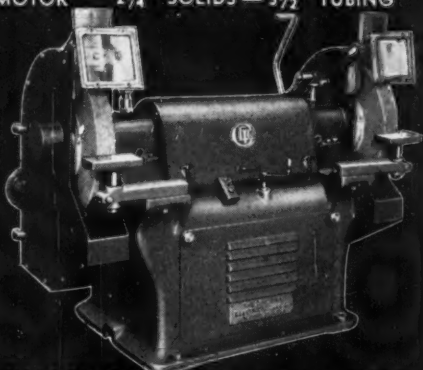
VEE BELT DRIVEN
BUFFING AND POLISHING LATHES
3, 5, 7½, 10 AND 15 H.P. — SINGLE OR
DOUBLE MOTOR



WET ABRASIVE
CUT-OFF MACHINE. CAPACITY:
2¼" SOLIDS — 3½" TUBING

MANUFACTURERS OF

Electric Drills
Screw Drivers
Nut Setters
Tappers
Routers
Portable Grinders
Tool Post Grinders
Speed Lathes
Bench and Pedestal Grinders
Bench and Pedestal Buffers
Abrasive Cut-off Machines
Air Master Dust Collectors



THREE-SPEED SNAGGING GRINDERS — 18", 20", AND 24"

TRADE

The Cincinnati

MARK

THE CINCINNATI ELECTRICAL TOOL CO.

Division of THE R. K. LBLOND MACHINE TOOL CO.

2620 MADISON ROAD

CINCINNATI 8, OHIO

Hardened Tool Steel Vees

60 ROCKWELL C

protect the carriage ways of
"AMERICAN" PACEMAKER LATHES

They are standard equipment
on all "AMERICAN" Lathes

These hardened vees are made of solid tool steel and ground to gauge tolerances for interchangeability should replacement ever be required.

After hardening, the metallurgical structure is stabilized by cold treatment at minus 100° Fahrenheit to prevent twisting or warping.

This feature is but one of the outstanding advantages offered by the new "AMERICAN" Pacemaker Lathes.

Bulletin No. 16 gives the complete story—want you?



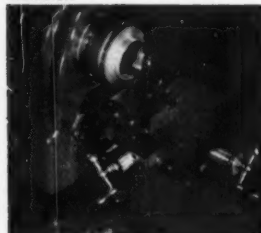
THE AMERICAN TOOL WORKS CO.

Cincinnati, Ohio U.S.A.

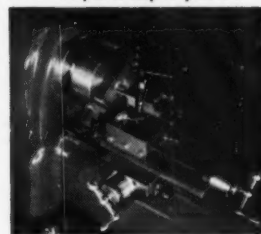
LATHES AND RADIAL DRILLS



Collet Work — The right machine for collet work of one-inch or less diameter.



Step Chuck Work — For rapid and accurate holding of tubing, castings, moldings, stampings and machined parts. Capacity to 6".



Jaw Chuck Work—Integral mount, universal or independent, for extra accuracy. Capacity to 5".



Face Plate Work — 9" slotted and tapped face plate for holding irregular shapes.

HARDINGE
ELMIRA, N.Y.

HIGH SPEED PRECISION LATHE

Correct Size - High Speed - Precision Results



SPECIFICATIONS:
1" Collet Capacity
9" Swing
17" Center Distance
8 Speeds to 4000 r.p.m.

The above three important requirements for proper lathe work in tool rooms, production departments, or laboratories are completely fulfilled by the new Hardinge DV59 High Speed Precision Lathe.

Correct size of the machine in relation to work saves loss from under-capacity production on larger lathes. High spindle speeds, up to 4000 r.p.m., permit full capacity cutting and excellent finish. Sustained accuracy and ease of operation assure precision results.

Send for Free illustrated Bulletin DV 59



HARDINGE BROTHERS, INC., Elmira, N. Y.

Offices in principal cities. Export office, 269 LaFayette St., New York 12, N. Y.